UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,704	12/22/2003	Tim Keith	2976-4037US1	8966

			EXAMINER
27123	7590	11/20/2006	SALMON, KATHERINE D

MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/743,704	KEITH ET AL.
	Examiner	Art Unit	
	Katherine Salmon	1634	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>21 September 2006</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) <u>16-19,22-26,28-31 and 33</u> is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-15,20,21,27 and 32</u> is/are rejected.

7) ☒ Claim(s) <u>13-15,20 and 21</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>22 December 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>12/22/2003</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☒ Other: <u>2 ALignments</u>.

DETAILED ACTION

Election/Restrictions

1.   Applicant's election with traverse of Group I, and SEQ ID No. 4 and the SNP of

SEQ ID NO. 49 in the reply filed on 9/21/2006 is acknowledged.

The traversal is on the ground(s) that there is no serious search burden because

to search one group the other groups must be considered (p. 3 2nd paragraph). The

reply asserts the search of DNA and proteins would overlap because the nucleic acids,

vectors, and host cells encode and express the product encompassed by the protein

claims (p. 3 3rd paragraph). The reply asserts the methods of treating Group V use

antibodies of Group III having an antigen binding portion to the polypeptides of Group II

and nucleic acids of Group I encoded by such polypeptides may be bound (p. 3 last

paragraph).

This is not found persuasive because the requirement for restriction mailed on

7/24/2006 details the criteria for separation of the groups based on independent or

distinctiveness of the claims and the serious burden of search the groups in

combination.

Groups drawn to nucleotides, antibodies, and polypeptides are patentably distinct

because they are drawn to different products having different structures and functions.

The search for each of the groups presents a serious search burden, as the searches

for each are not coextensive in scope. The inventions have different status in the art as

shown by their different classifications. The nucleotides and polypeptides are described

by sequence information, which must be searched in different databases. There is also

a search burden in the non-patent literature. Prior to the concomitant isolation and

expression of the sequence of interest there may be journal articles devoted solely to

polypeptides, which would not have described the polynucleotides. Similarly, there may

have been "classical" genetics papers with no knowledge of the polypeptide but spoke

to the gene. A polypeptide and an antibody that binds to the polypeptide require

different searches. An amino acid sequence search of the full-length protein is

necessary for a determination of novelty and unobviousness of the protein. However,

such a search is not required to identify antibodies. Furthermore, antibodies, which bind

to an epitope of a polypeptide of a group, may be known even if the polypeptide is

novel. Searching each of these groups is not coextensive and is a serious burden. For

example, art relating to the sequence of nucleic acids would not necessarily provide

descriptive information for the polypeptide.

Upon further consideration of the elected claims, the examiner decided that a

partial rejoinder of the sequences was appropriate. The nucleic acid of SEQ ID No. 1 is

the insert from a genomic BAC. The particular nucleic acids of SEQ ID No. 2, 4, 6, 8,

and 10 are alternately spliced cDNAs from this sequence. Therefore SEQ IDs No. 1, 2,

4, 6, 8, and 10 will be rejoined. The requirement for a particular SNP, however, is still

valid. The sequences of SNPs are each distinct fragments, which must be search

individually.

The requirement is still deemed proper and is therefore made FINAL.

2.   Claims 16-19, 22-26, 28-31, and 33 are withdrawn from consideration as being

drawn to a nonelected invention.

3.   An Action on the merits for Claims 1-15, 20-21, 27, and 32 with the specific SNP

of SEQ ID No. 49 is set forth below.

Claim Interpretation

4.   It is noted that in the parent application, 09/627465 the first action mailed

06/19/2002 rejected SEQ ID No. 1 as being anticipated by BACPAC filters. The

rejection was withdrawn in view of applicant's disclosure of an "isolated" nucleic acid in

the specification in the following office action mailed 02/10/2003 (see p. 6 of office

action and p. 11-12 of reply to office action pointing to definition of "isolated" filed

11/27/2002). Therefore, because of the interpretation of "isolated" already made of

record Claim 27 is not being rejected as anticipated by the BACPAC filters.

Claim Objections

5.   Claims 13-15 are identical to Claims 6-8. Claims 13-15 and Claims 6-8 depend

from Claim 5:

Claims 20-21 are objected to because of the following informalities: The claims

contain references to sequence and SNP sites described in tables. MPEP 2173(s)

states "Where possible, claims are to be complete in themselves. Incorporation by

reference to a specific figure or table is permitted only in exceptional circumstances

where there is no practical way to define the invention in words and where it is more

concise to incorporate by reference than duplicating a drawing or table into the claim.

Incorporation by reference is a necessity doctrine, not for applicant's convenience." In

the instant case it would be possible to refer to the claimed sequences and SNP sites

using proper sequence identifiers and phraseology. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.

Claim 21 is indefinite over the recitation "an isolated variant of SEQ ID No. 4". It

is not clear what limits the claim with regard to the polymorphisms. It is not clear what it

means for a nucleic acid to "contain" a polymorphism. It would be clearer if applicant

required the presence of a polymorphic site as a particular position in a sequence.

Clarification is required.

Claim Rejections - 35 USC § 112-Written Description

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

7.   Claims 1-15, 20-21, 27, and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 is drawn to an isolated nucleic acid which may comprise at least 50 nucleotides of SEQ ID No. 2, 4, 6, 8, or 10 or a complementary strand. Claims 2-3 define the nucleic acid. Claims 4-8 identify the vector or host cell. Claim 9 is drawn to at least 50 consecutive nucleotides of SEQ ID No. 2, 4, 6, 8, or 10 or a complementary strand. Claim 10 is drawn to hybridization conditions. Claims 11-15 define vector or host cell. Claims 20-21 are drawn to variants. Claim 27 is drawn to an isolated nucleic acid fragment comprising at least 15 consecutive nucleotide bases of SEQ ID No. 1. Claim 32 is drawn to a kit.

It is noted that nucleic acids consisting of SEQ ID No. 2, 4, 6, 8, or 10 meet the written description requirements. However, none of the instant claims are limited to such a molecule. It is noted that "a complementary nucleic acid sequence" is being broadly interpreted as encompassing any fragment of SEQ ID NO. 2, 4, 6, 8, or 10 and not the full length of the claimed sequences. The claims as written encompass fragments of at least 50 mer of SEQ ID No. 2, 4, 6,8, or 10; at least 15 mer of SEQ ID No. 1, and any fragment of any length which is a complement of SEQ ID NO. 1, 2, 4, 6,8, or 10. Therefore the claims as broadly written encompass flanking sequences or unspecified length and identity.

The claims as broadly written encompass isolated nucleic acids comprising

fragments of SEQ ID No. 1-2, 4, 6, 8, or 10 without any description of the nucleotides

flanking the fragments. The specification does not provide an adequate written

description of the claimed genus of nucleic acids as the claims are broadly written.

Additionally, the claims do not set forth the number or identity of nucleotides

flanking the recited nucleic acid fragments. Accordingly, the claims encompass nucleic

acids which comprise the recited 15 mer fragments of SEQ ID NO: 1 or 50 mer

fragments of SEQ ID No. 2, 4,6, 8, 10 but which do not share any overall level of

sequence identity with the sequences. The variants may include nucleotide

substitutions, additions, deletions, translocations and truncations. The claims thereby

encompass naturally and non-naturally occurring allelic, mutant and splice variants of

SEQ ID No. 1, 2, 4,6, 8, and 10.

The general knowledge in the art concerning homologues, mutants, allelic and

splice variants does not provide any indication of how modification of the sequence of

SEQ ID No. 1, 2, 4,6, 8, 10 will affect the functional properties of SEQ ID No. 1, 2, 4,6,

8, 10. The structure and function of one molecule does not provide guidance as to the

structure and function of other molecules. Therefore, the description of one molecule

(SEQ ID No. 1, 2, 4,6, 8, 10) is not representative of a genus of homologues, splice,

mutant and allelic variants of SEQ ID No. 1, 2, 4,6, 8, 10 having unspecified functional

activities different from that of SEQ ID No. 1, 2, 4,6, 8, 10. A general statement in the

specification of a desire to obtain gene sequences, homologues from other species,

mutated species, and polymorphic sequences is not equivalent to providing a clear and

complete description of specific sequences which fall within the claimed genus of

nucleic acids.

In analysis of the claims for compliance with the written description requirement

of 35 U.S.C. 112, first paragraph, the written description guidelines note regarding

genus/species situations that "Satisfactory disclosure of a ``representative number"

depends on whether one of skill in the art would recognize that the applicant was in

possession of the necessary common attributes or features of the elements possessed

by the members of the genus in view of the species disclosed." (See: Federal Register:

December 21, 1999 (Volume 64, Number 244), revised guidelines for written

description.)   In the instant case, the specification fails to teach the necessary common

attributes or features of the genus of encompassed nucleic acids in view of the species

disclosed. As such, one of skill in the art would not recognize that applicant was in

possession of the detection of ANY fragment of SEQ ID No. 3 or 4.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must

convey with reasonable clarity to those skilled in the art that, as of the filing date sought,

he or she was in possession of the invention." (See page 1117). The specification does

not "clearly allow persons of ordinary skill in the art to recognize that [he or she]

invented what is claimed." (See page 1116).

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405
held that:

...To fulfill the written description requirement, a patent specification must describe an
invention and do so in sufficient detail that one skilled in the art can clearly conclude,
"the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.* ,
107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gosteli* , 872 F.2d 1008,
1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow

persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood* , 107 F.3d at 1572, 41 USPQ2d at 1966.

An adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. *Fiers v. Revel* , 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." Id. at 1170, 25 USPQ2d at 1606.

The claims do not meet the written description provision of 35 USC 112, first paragraph. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (See page 1115.)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 1-5, 9-12, 15, 20-21, 27, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Shankar et al. (Biochem. J. 1994 Vol 300 p. 295) as evidenced by GenBank Accession Number U14383 (NCBI website December 31, 1994).

Shankar et al. teaches a novel human airway mucin and disclose that this sequence is provided in the GenBank under the accession number U04799 (p. 295). GenBank Accession number U04799 has been replaced by Accession No. U14383 (see Accession No. U14383).

With regard to Claims 1 and 9, GenBank Accession No. U14383 teaches a sequence which is 87.7% similar over the entire length to SEQ ID NO. 4, 82% similar to SEQ ID No. 2, 69.2% similar to SEQ ID Nos 6, 8, and 10. U14383 comprising at least 50 nucleotides which hybridize to SEQ ID No. 4, 2, 6, 8, and 10. U14383 comprising at least 50 nucleotides which hybridize under stringent conditions to SEQ ID No. 2, 4, 6, 8, and 10 (please see attached alignment of GenBank Accession No. U14383 with SEQ ID No. 2, 4, 6, 8, and 10).

With regard to Claim 2, Shanker et al. teaches a nucleic acid sequence which is composed of DNA. With regard to Claim 3, GenBank Accession No. U14383 provides the amino acid sequence; therefore, the isolated nucleic acid which is at least 50 mer could be RNA.

With regard to Claims 4 and 11, Shanker et al. teaches placing the inset into a UniZap vector (expression vector) (p. 296 1st column 1st full paragraph). With regard to Claims 5, 8, 12, and 15 Shanker et al. teaches screening the library and selecting positive plaques (host cells) (p. 296 1st column 2nd full paragraph).

With regard to Claim 10, Shanker et al. teaches a fragment, which has 98% similarity to SEQ ID No. 4, therefore the DNA sequence would hybridize to SEQ ID No. 4 under high stringency conditions. Further note, SEQ ID NO. 2, 6, 8, and 10 are splice

variants which are 100% identical at nucleotide positions 1-1004 therefore the Shanker

et al. fragments would also hybridze to SEQ ID No. 2,6, 8, and 10.

With regard to Claim 20, GenBank Accession No. U14383 comprises a

polynucleotide, which has at least 15 consecutive nucleotide of any of the nucleic acids

of Table 5 (SEQ 49) wherein there is a SNP site. The claims do not limit the SNP to a

particular type.

```
U14383      TGTGCACTCTTGG-CATATGCCTAGGAGTGGAACTGCTG   1399
            |||||||||||||| ||||||||||||||||||||||||
SEQ49       TGTGCACTCTTGGGCATATGCCTAGGAGTGGAACTGCTG   39
```

As observed above, the nucleotide sequence, U14383, comprises at least 15

nucleotides and there is a SNP (an deletion) at position 1374 of U14383, which is a

SNP site for SEQ ID No. 49.

With regard to Claim 21, U14383 comprises a sequence that is 89.5% similar to

SEQ ID No. 4; therefore, U14383 is a variant of SEQ ID No. 4. Genbank Accession No.

U14383 comprises SEQ ID No. 49 with a SNP variant between the two sequences.

With regard to Claim 27, U14383 comprises at least 15 consecutive nucleotides

of SEQ ID No. 1. For example nucleotides 300-419 of U14383 are 100% identical to

nucleotides 1780-1899 of SEQ ID No. 1.

With regard to Claim 32, the recitation "for detecting chromosome 12 disorder in

a biological sample" has not been given patentable weight because the recitation occurs

in the preamble. A preamble is generally not accorded any patentable weight where it

merely recites the purpose of a process or the intended use of a structure, and where

the body of the claim does not depend on the preamble for completeness but, instead,

the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535

F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88

USPQ 478, 481 (CCPA 1951). Accordingly, the claim language of "detecting

chromosome 12 disorder in a biological sample" merely sets forth the intended use or

purpose of the claimed kits, but does not limit the scope of the claims. Shanker et al.

teaches a RNAgents kit from Promega was used to isolate total RNA (p. 296 1st column

last full paragraph). Shanker et al. teaches RNA samples isolated were transferred to a

nylon membrane and probed with cDNA probes under high-stringency conditions which

were labeled with a random primer labeling kit (p. 296 1st column last full paragraph).

Therefore, Shanker et al. teaches probes and hybridization reagents (random primer

labeling kit).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

10.   Claims 6-7 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Shankar et al. (Biochem. J. 1994 Vol 300 p. 295) as evidenced by GenBank

Accession Number U14383 (NCBI website December 31, 1994) in view of Lasky et al.

(US Patent 5304640 April 19, 1994).

Shankar et al. teaches a novel human airway mucin and disclose that this

sequence is provided in the GenBank under the accession number U04799 (p. 295).

GenBank Accession number U04799 has been replaced by Accession No. U14383 (see

Accession No. U14383).

GenBank Accession No. U14383 teaches a sequence which is 87.7% similar

over the entire length to SEQ ID NO. 4, 82% similar to SEQ ID No. 2, 69.2% similar to

SEQ ID Nos 6, 8, and 10.   U14383 comprising at least 50 nucleotides which hybridize

under stringent conditions to SEQ ID No. 4, 2, 6, 8, and 10. U14383 comprising at least

50 nucleotides which hybridize under stringent conditions to SEQ ID No. 2, 4, 6, 8, and

10 (please see attached alignment of GenBank Accession No. U14383 with SEQ ID No.

2, 4, 6, 8, and 10).

Shanker et al. teaches placing the inset into a UniZap vector (expression vector) (p. 296 1st column 1st full paragraph). Shanker et al. teaches screening the library and selecting positive plaques (host cells) (p. 296 1st column 2nd full paragraph).

Shankar et al. does not teach human (eukaryotic) host cells.

However, at the time the invention was made, the transformation of human host cells with vectors comprising nucleic acids encoding human proteins was routing in the art. With regard to Claims 6-7 and 13-14, Lasky et al. teaches, "Typical eukaryotic host cells are mammalian, such as Chinese hamster ovary cells or human embryonic kidney 293 cells (Col. 11, lines 36-38)."

Therefore, It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have transformed human host cells with vectors comprising the nucleic acid taught by Shankar et al. The ordinary artisan would have been motivated to create such host cells for the benefit of expression the polypeptide encoded by the nucleic acid taught by Shankar et al. in order to characterize and study the polypeptide.

Double Patenting

11.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29
USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.
1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422
F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163
USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d)
may be used to overcome an actual or provisional rejection based on a nonstatutory
double patenting ground provided the conflicting application or patent either is shown to
be commonly owned with this application, or claims an invention made as a result of
activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a
terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with
37 CFR 3.73(b).

Claims 1-15 and 27 are rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claims 1, 9, 13-25 of U.S. Patent No.

6737519. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the scope of the claimed sequences overlap with each

other. Claims 1 and 9 of the instant application are drawn to SEQ ID No. 2, 4, 6, 8, or

10 or a fragment thereof, and stringent conditions. Claim 14 and 22 of the '519 patent

are drawn to SEQ ID No. 2 or a fragment of 500 nucleotides or more of SEQ ID No. 2.

Since SEQ ID No. 2, 4, 6, 8, and 10 are splice variants of each other and because each

sequence share at least 500 bp in common the SEQ ID Nos of the instant application

are within the scope of Claim 14 and 22 of the '519 patent. Claims 2-8 and 10-15 of the

instant application are drawn to defining the nucleic acid, vector and host cell. These

claims are not patentably distinct from Claims 15-21 and 23-25 of the '519 patent.

Claim 27 of the instant application is drawn to a fragment of SEQ ID No. 1 of at least 15

consecutive nucleotides. Claims 1, 9, and 13 of the '519 patent are drawn to SEQ ID

No. 1 or a fragment of at least 500 nucleotides. The instant Claim 27 would fall into the

scope of the patented claims because both are drawn to SEQ ID No. 1.

Conclusion

12.   No Claims are allowed.

13.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Salmon whose telephone number is (571) 272-3316. The examiner can normally be reached on Monday-Friday 8AM-430PM.
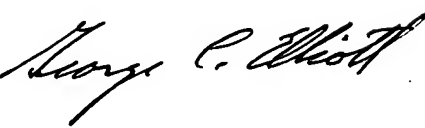
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Katherine Salmon
Examiner
Art Unit 1634

JEANINE A. GOLDBERG
PRIMARY EXAMINER
10/30/06

RAM R. SHUKLA, PH.D.
SUPERVISORY PATENT EXAMINER

George C. Elliott, Ph.D
Director
Technology Center 1600

GenCore version 5.1.9
Copyright (c) 1993 - 2006 Biocceleration Ltd.

OM nucleic - nucleic search, using sw model

Run on: October 24, 2006, 13:12:54 ; Search time 2 Seconds
                                              (without alignments)
                                              11.718 Million cell updates/sec

Title: U14383
Perfect score: 1403
Sequence: 1 CCACGAGCTGCCCACGTCCT..........AGGAGTGGAACTGCTGGGTA 1403

Scoring table: IDENTITY_NUC
               Gapop 10.0 , Gapext 0.5

Searched: 5 seqs, 8352 residues

Total number of hits satisfying chosen parameters: 10

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 5000 summaries

Database :   US10743704.seq:*

        Pred. No. is the number of results predicted by chance to have a
        score greater than or equal to the score of the result being printed,
        and is derived by analysis of the total score distribution.

                              SUMMARIES
                         %
Result   Query
    No.   Score   Match Length DB   ID   Description
    ----
     1   1230.4   87.7   1441 1   US-10-743-704-4   Sequence 4, Appli
     2   1149.9   82.0   1581 1   US-10-743-704-2   Sequence 2, Appli
     3   971.2   69.2   1576 1   US-10-743-704-6   Sequence 6, Appli
     4   971.2   69.2   1744 1   US-10-743-704-10   Sequence 10, Appl
     5   971.2   69.2   2010 1   US-10-743-704-8   Sequence 8, Appli
  c 6   130   9.3   1441 1   US-10-743-704-4   Sequence 4, Appli
  c 7   130   9.3   1576 1   US-10-743-704-6   Sequence 6, Appli
  c 8   130   9.3   1581 1   US-10-743-704-2   Sequence 2, Appli
  c 9   130   9.3   1744 1   US-10-743-704-10   Sequence 10, Appl
  c 10   130   9.3   2010 1   US-10-743-704-8   Sequence 8, Appli

                              ALIGNMENTS

RESULT 1
US-10-743-704-4

```
; Sequence 4, Application US/10743704
; GENERAL INFORMATION:
;  APPLICANT: KEITH, TIM
;  APPLICANT:  LITTLE, RANDALL D.
;  APPLICANT:  EERDEWEGH, PAUL VAN
;  APPLICANT:  DUPUIS, JOSEE
;  APPLICANT:  DEL MASTRO, RICHARD L.
;  APPLICANT:  SIMON, JASON
;  APPLICANT:  ALLEN, KRISTINA
;  APPLICANT:  PANDIT, SUNIL
;  TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
;  FILE REFERENCE: 2976-4037
;  CURRENT APPLICATION NUMBER: US/10/743,704
;  CURRENT FILING DATE:  2003-12-22
;  PRIOR APPLICATION NUMBER: US/09/627,465
;  PRIOR FILING DATE: 2000-07-28
;  PRIOR APPLICATION NUMBER: 60/211,749
;  PRIOR FILING DATE: 2000-06-14
;  PRIOR APPLICATION NUMBER: 60/146,336
;  PRIOR FILING DATE: 1999-07-30
;  NUMBER OF SEQ ID NOS: 51
;  SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 4
;   LENGTH: 1441
;   TYPE: DNA
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (3)..(1166)
US-10-743-704-4
```

```
   Query Match              87.7%;   Score 1230.4;  DB 1;. Length 1441;
   Best Local Similarity    97.2%;   Pred. No. 7.2e-07;
   Matches 1373;  Conservative    0;  Mismatches   26;  Indels   14;  Gaps   12;

Qy        2 CACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCT 61
            ||||||||||||||||||||||||||||| ||||| ||||||||||||||||||||| | |
Db        2 CACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCGT 61

Qy       62 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGG 121
            |||||||| |||||| |||||| ||||||||||||||||||||||||||| |||| ||||
Db       62 CTCCAGGAAGGGAC-CCGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAAGGAC-CCGG 119

Qy      122 GTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGT 181
            || || |||||| |||||| ||| | |||||||||||||||||| |||||||||||||||
Db      120 GTCCACGAGCTGGCCACGTCCTCTGCAGGAAGGGACCCCGGGTCCACGAGCTGCCCACGT 179

Qy      182 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 241
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      180 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 239

Qy      242 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC--GGGTCACGAACTGCCCA 299
            ||||| |||||||||||||||||||||||||||||||||||  || |||||||||||||
Db      240 CGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTCCACGAACTGCCCA 299

Qy      300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359
```

```
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   300  CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA  359

Qy   360  CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC  419
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   360  CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC  419

Qy   420  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCCCTCTCCAGGAGGG  478
          |||||||||||||||||||||||||||||  |||||||||||||||||||||||||||||
Db   420  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCCCTCTCCAGGAGGG  479

Qy   479  GACCCGGGT-CACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGT-CACGAGCTGC  536
          ||||||||| ||||||||||||||||||||         |  |||||||||||||||||| ||||||||
Db   480  GACCCGGGTCCACGAGCTGCCCACGTCGTCAACGGGAAGGGACCCGGGTCCACGAGCTGC  539

Qy   537  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCGCTCTCCAGGAGGG  595
          |||||||||||||||||||||||||||||  |||||||||||||||||||||||||||||
Db   540  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCGCTCTCCAGGAGGG  599

Qy   596  GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT  655
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   600  GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT  659

Qy   656  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA  715
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   660  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA  719

Qy   716  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA  775
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   720  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA  779

Qy   776  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAGCTGCCCACGTCCTCTCCAG  834
          ||||||||||||||||||||||||||||||||||  ||||||||||||||||||||||||
Db   780  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCACGTCCTCTCCAG  839

Qy   835  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG  894
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   840  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG  899

Qy   895  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC  954
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   900  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC  959

Qy   955  CTCCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG  1014
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   960  CTCCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG  1019

Qy  1015  GCA-GGCACCCTGTCGTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG  1073
          ||| ||||||||||||   ||||||||||||||||||||||||||||||||||||||||||
Db  1020  GCAGGGCACCCTGTGCTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG  1079

Qy  1074  ATGGCGCCTCGGTGCG--GCCTTGGACCTGCCCCCATGGACCTGGAGACAGGGTTTCTCC  1131
          ||||||||||||||||    ||||||||||||||||||||||||||||||||||||||||
Db  1080  ATGGCGCCTCGGTGCGCAGCCTTGGACCTGCCCCCATGGACCTGGAGACAGGGTTTCTCC  1139

Qy  1132  TCATTGGCCAGGCTGGTCTCGAACTCCTGACCTCAGACGATCCACCTGCCTCAGCCTCCC  1191
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db      1140  TCATTGGCCAGGCTGGTCTCGAACTCCTGACCTCAGACGATCCACCTGCCTCAGCCTCCC  1199

Qy      1192  GAAGTGTTGGGATTACA-GCACGAGCCACTGTGCCCGGCCATCATTCCTTTTTACTGCTG  1250
              ||||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||
Db      1200  GAAGTGTTGGGATTACAGGCACGAGCCACTGTGCCCGGCCATCATTCCTTTTTACTGCTG  1259

Qy      1251  ACTAATAGTCTGCTGTGTGAATCCACCGCTAGAAACCCACTCATCAGTTGATGGTCATGT  1310
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1260  ACTAATAGTCTGCTGTGTGAATCCACCGCTAGAAACCCACTCATCAGTTGATGGTCATGT  1319

Qy      1311  GGGTTGCTTCTCGTATTCGCTTATTATGAACAGTGCTGGAATAAACGTTCCTGTGCACTC  1370
              |||||||||| |||||||||||||||||||||||||||||||||||||||||||||||||
Db      1320  GGGTTGCTTCTGCTATTCGCTTATTATGAACAGTGCTGGAATAAACGTTCCTGTGCACTC  1379

Qy      1371  TT-GGCATATGCCTAGGAGTGGAACTGCTGGGT  1402
              || |||||| |||||||||||||||||||||||
Db      1380  TTGGGCATACGCCTAGGAGTGGAACTGCTGGGT  1412


RESULT 2
US-10-743-704-2
; Sequence 2, Application US/10743704
; GENERAL INFORMATION:
;  APPLICANT: KEITH, TIM
;  APPLICANT:  LITTLE, RANDALL D.
;  APPLICANT:  EERDEWEGH, PAUL VAN
;  APPLICANT:  DUPUIS, JOSEE
;  APPLICANT:  DEL MASTRO, RICHARD L.
;  APPLICANT:  SIMON, JASON
;  APPLICANT:  ALLEN, KRISTINA
;  APPLICANT:  PANDIT, SUNIL
;  TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
;  FILE REFERENCE: 2976-4037
;  CURRENT APPLICATION NUMBER: US/10/743,704
;  CURRENT FILING DATE:  2003-12-22
;  PRIOR APPLICATION NUMBER: US/09/627,465
;  PRIOR FILING DATE: 2000-07-28
;  PRIOR APPLICATION NUMBER: 60/211,749
;  PRIOR FILING DATE: 2000-06-14
;  PRIOR APPLICATION NUMBER: 60/146,336
;  PRIOR FILING DATE: 1999-07-30
;  NUMBER OF SEQ ID NOS: 51
;  SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 2
;   LENGTH: 1581
;   TYPE: DNA
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (3)..(1307)
US-10-743-704-2

   Query Match            82.0%;   Score 1149.9;  DB 1;  Length 1581;
   Best Local Similarity  88.4%;   Pred. No. 2.2e-06;
   Matches 1373;  Conservative   0;  Mismatches  26;  Indels 155;  Gaps  13;
```

```
Qy     2 CACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCT 61
         ||||||||||||||||||||||||||||||||| ||||| |||||||||||||||||||| | |
Db     2 CACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCGT 61

Qy    62 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGG 121
         ||||||||| ||||| |||||| |||||||||||||||||||||||||||||| |||| ||||
Db    62 CTCCAGGAAGGGAC-CCGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAAGGAC-CCGG 119

Qy   122 GTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGT 181
         || || |||||| ||||| ||| | |||||||||||||||||||||| ||||||||||||||
Db   120 GTCCACGAGCTGGCCACGTCCTCTGCAGGAAGGGACCCCGGGTCCACGAGCTGCCCACGT 179

Qy   182 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 241
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   180 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 239

Qy   242 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC--GGGTCACGAACTGCCCA 299
         ||||| |||||||||||||||||||||||||||||||||||.| || |||||||||||||
Db   240 CGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTCCACGAACTGCCCA 299

Qy   300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359

Qy   360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419

Qy   420 CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCCCTCTCCAGGAGGG 478
         |||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db   420 CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCCCTCTCCAGGAGGG 479

Qy   479 GACCCGGGT-CACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGT-CACGAGCTGC 536
         |||||||| |||||||||||||||||| | |||||||||||||| |||||||||
Db   480 GACCCGGGTCCACGAGCTGCCCACGTCGTCAACGGGAAGGGACCCGGGTCCACGAGCTGC 539

Qy   537 CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCGCTCTCCAGGAGGG 595
         ||||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db   540 CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCGCTCTCCAGGAGGG 599

Qy   596 GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 655
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   600 GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 659

Qy   656 GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 715
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   660 GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 719

Qy   716 GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 775
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   720 GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 779

Qy   776 GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAGCTGCCCACGTCCTCTCCAG 834
         |||||||||||||||||||||||||||||||||| |||||||||||||||||||||||||||.
Db   780 GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCACGTCCTCTCCAG 839

Qy   835 GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 894
```

```
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      840 GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 899

Qy      895 GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 954
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      900 GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 959

Qy      955 CTCCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1014
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      960 CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1019

Qy     1015 GCA-GGCACCCTGTCGTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1073
            ||| ||||||||||   ||||||||||||||||||||||||||||||||||||||||||||
Db     1020 GCAGGGCACCCTGTGCTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1079

Qy     1074 ATGGCGCCTCGGTGCG--GCCTTGGACCTGCCCCCATGGACCTGG--------------- 1116
            ||||||||||||||||   ||||||||||||||||||||||||||
Db     1080 ATGGCGCCTCGGTGCGCAGCCTTGGACCTGCCCCCATGGACCTGGGAACCTCCCGGCTCT 1139

Qy     1117 ----------------------------------------------------------- 1116

Db     1140 TCCCACTCGGGAAAGGAAGGCTCTGGGCATGGAGGTCGGCCAGGCCCCATCCCCGTACCC 1199

Qy     1117 ----------------------------------------------------------- 1116

Db     1200 TGGCCCTTCTTCCTGCTTCCTGTTTGTCACTGCCCCGGGGCCTTTGCACCTGCATTCCCT 1259

Qy     1117 ------AGACAGGGTTTCTCCTCATTGGCCAGGCTGGTCTCGAACTCCTGACCTCAGACG 1170
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     1260 CTCTCTAGACAGGGTTTCTCCTCATTGGCCAGGCTGGTCTCGAACTCCTGACCTCAGACG 1319

Qy     1171 ATCCACCTGCCTCAGCCTCCCGAAGTGTTGGGATTACA-GCACGAGCCACTGTGCCCGGC 1229
            ||||||||||||||||||||||||||||||||||||||  ||||||||||||||||||||
Db     1320 ATCCACCTGCCTCAGCCTCCCGAAGTGTTGGGATTACAGGCACGAGCCACTGTGCCCGGC 1379

Qy     1230 CATCATTCCTTTTTACTGCTGACTAATAGTCTGCTGTGTGAATCCACCGCTAGAAACCCA 1289
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     1380 CATCATTCCTTTTTACTGCTGACTAATAGTCTGCTGTGTGAATCCACCGCTAGAAACCCA 1439

Qy     1290 CTCATCAGTTGATGGTCATGTGGGTTGCTTCTCGTATTCGCTTATTATGAACAGTGCTGG 1349
            |||||||||||||||||||||||||||||||||||||   ||||||||||||||||||||
Db     1440 CTCATCAGTTGATGGTCATGTGGGTTGCTTCTGCTATTCGCTTATTATGAACAGTGCTGG 1499

Qy     1350 AATAAACGTTCCTGTGCACTCTT-GGCATATGCCTAGGAGTGGAACTGCTGGGT 1402
            ||||||||||||||||||||||| ||||||  ||||||||||||||||||||||
Db     1500 AATAAACGTTCCTGTGCACTCTTGGGCATACGCCTAGGAGTGGAACTGCTGGGT 1553
```

RESULT 3
US-10-743-704-6
; Sequence 6, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.

    Query Match   69.2%;   Score 971.2;   DB 1;   Length 1576;
    Best Local Similarity   96.1%;   Pred. No. 3.3e-05;
    Matches 1097; Conservative   0; Mismatches   33; Indels   12; Gaps   10;

Qy   2 CACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCT 61
              ||||||||||||||||||||||||||||| ||||| ||||||||||||||||||||| | |
Db   2 CACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCGT 61

Qy   62 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGG 121
              ||||||||| ||||| |||||| ||||||||||||||||||||||||||||||| |||| ||||
Db   62 CTCCAGGAAGGGAC-CCGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAAGGAC-CCGG 119

Qy   122 GTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGT 181
              || || |||||| ||||| ||| | ||||||||||||||||||| ||||||||||||||||
Db   120 GTCCACGAGCTGGCCACGTCCTCTGCAGGAAGGGACCCCGGGTCCACGAGCTGCCCACGT 179

Qy   182 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 241
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   180 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 239

Qy   242 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC--GGGTCACGAACTGCCCA 299
              ||||| |||||||||||||||||||||||||||||||||||| || |||||||||||||||
Db   240 CGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTCCACGAACTGCCCA 299

Qy   300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359

Qy   360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419

```
Qy     420  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCCCTCTCCAGGAGGG 478
            |||||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db     420  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCCCTCTCCAGGAGGG 479

Qy     479  GACCCGGGT-CACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGT-CACGAGCTGC 536
            ||||||||| |||||||||||||||||||||| | ||||||||||||| |||||||||||
Db     480  GACCCGGGTCCACGAGCTGCCCACGTCGTCAACGGGAAGGGACCCGGGTCCACGAGCTGC 539

Qy     537  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCGCTCTCCAGGAGGG 595
            ||||||||||||||||||||||||||||| |||||||||||||||||||||||||||||
Db     540  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCGCTCTCCAGGAGGG 599

Qy     596  GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 655
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     600  GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 659

Qy     656  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 715
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     660  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 719

Qy     716  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 775
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     720  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 779

Qy     776  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAGCTGCCCACGTCCTCTCCAG 834
            |||||||||||||||||||||||||||||||||| |||||||||||||||||||||||||
Db     780  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCACGTCCTCTCCAG 839

Qy     835  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 894
            ||||||||||||||||||||||||||||·|||||||||||||||||||||||||||||||
Db     840  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 899

Qy     895  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 954
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     900  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 959

Qy     955  CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1014
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     960  CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1019

Qy    1015  GCA-GGCACCCTGTCGTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1073
            ||| |||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db    1020  GCAGGGCACCCTGTGCTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1079

Qy    1074  ATGGCGCCTCGGTGCG--GCCTTGGACCTGCCCCCATGGACCTGGAGACAGGGTTTCTCC 1131
            ||||||||||||||||  ||||||||||||||||||||||||||  ||        |||
Db    1080  ATGGCGCCTCGGTGCGCAGCCTTGGACCTGCCCCCATGGACCTGGGAACCTCCCGGCTCT 1139

Qy    1132  TC 1133
            ||
Db    1140  TC 1141
```

RESULT 4
US-10-743-704-10
; Sequence 10, Application US/10743704
; GENERAL INFORMATION:

```
  Query Match              69.2%;   Score 971.2;  DB 1;   Length 1744;
  Best Local Similarity    96.1%;   Pred. No. 3e-05;
  Matches 1097;  Conservative    0;  Mismatches  33;  Indels  12;  Gaps  10;


Qy        2 CACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCT 61
            |||||||||||||||||||||||||||||| ||||| |||||||||||||||||||||| | |
Db        2 CACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCGT 61


Qy       62 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGG 121
            ||||||||| ||||| |||||| |||||||||||||||||||||||||||||| |||| ||||
Db       62 CTCCAGGAAGGGAC-CCGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAAGGAC-CCGG 119


Qy      122 GTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGT 181
            || || ||||||| ||||| ||| | |||||||||||||||||| |||||||||||||||||
Db      120 GTCCACGAGCTGGCCACGTCCTCTGCAGGAAGGGACCCCGGGTCCACGAGCTGCCCACGT 179


Qy      182 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 241
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      180 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 239


Qy      242 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC--GGGTCACGAACTGCCCA 299
            ||||| |||||||||||||||||||||||||||||||||||| || |||||||||||||||
Db      240 CGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTCCACGAACTGCCCA 299


Qy      300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      300 CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA 359
```

```
Qy    360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419
          ||||||||||||||||||||||||||||||||||||||||||||||||||||·||||||||
Db    360 CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC 419

Qy    420 CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCCCTCTCCAGGAGGG 478
          |||||||||||||||||||||||||||||| |||||||||||||||||||||||||||||
Db    420 CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCCCTCTCCAGGAGGG 479

Qy    479 GACCCGGGT-CACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGT-CACGAGCTGC 536
          ||||||||| |||||||||||||||||||  |  ||||||||||||||| ||||||||||
Db    480 GACCCGGGTCCACGAGCTGCCCACGTCGTCAACGGGAAGGGACCCGGGTCCACGAGCTGC 539

Qy    537 CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCGCTCTCCAGGAGGG 595
          ||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||||
Db    540 CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCGCTCTCCAGGAGGG 599

Qy    596 GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 655
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    600 GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT 659

Qy    656 GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 715
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    660 GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA 719

Qy    716 GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 775
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    720 GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA 779

Qy    776 GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAGCTGCCCACGTCCTCTCCAG 834
          ||·|||||||||||||||||||||||||||||||| ||||||||||||||||||||||||
Db    780 GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCACGTCCTCTCCAG 839

Qy    835 GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 894
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    840 GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG 899

Qy    895 GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 954
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    900 GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC 959

Qy    955 CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1014
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    960 CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG 1019

Qy   1015 GCA-GGCACCCTGTCGTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1073
          ||| |||||||||| |||||||||||||||||||||||||||||||||||||||||||||
Db   1020 GCAGGGCACCCTGTGCTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG 1079

Qy   1074 ATGGCGCCTCGGTGCG--GCCTTGGACCTGCCCCCATGGACCTGGAGACAGGGTTTCTCC 1131
          ||||||||||||||||  |||||||||||||||||||||||||||||||| ||     |||
Db   1080 ATGGCGCCTCGGTGCGCAGCCTTGGACCTGCCCCCATGGACCTGGGAACCTCCCGGCTCT 1139

Qy   1132 TC 1133
          ||
Db   1140 TC 1141
```

RESULT 5
US-10-743-704-8
; Sequence 8, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.
; APPLICANT: SIMON, JASON
; APPLICANT: ALLEN, KRISTINA
; APPLICANT: PANDIT, SUNIL
; TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
; FILE REFERENCE: 2976-4037
; CURRENT APPLICATION NUMBER: US/10/743,704
; CURRENT FILING DATE: 2003-12-22
; PRIOR APPLICATION NUMBER: US/09/627,465
; PRIOR FILING DATE: 2000-07-28
; PRIOR APPLICATION NUMBER: 60/211,749
; PRIOR FILING DATE: 2000-06-14
; PRIOR APPLICATION NUMBER: 60/146,336
; PRIOR FILING DATE: 1999-07-30
; NUMBER OF SEQ ID NOS: 51
; SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 8
; LENGTH: 2010
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (3)..(1244)
US-10-743-704-8

  Query Match   69.2%;   Score 971.2; DB 1;   Length 2010;
  Best Local Similarity   96.9%;   Pred. No. 2.6e-05;
  Matches 1091; Conservative   0; Mismatches   23; Indels   12; Gaps   10;

Qy   2 CACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCT 61
             |||||||||||||||||||||||||||||| ||||| |||||||||||||||||||||| | |
Db   2 CACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCGT 61

Qy   62 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGG 121
             |||||||| ||||| |||||| |||||||||||||||||||||||||||||| |||| ||||
Db   62 CTCCAGGAAGGGAC-CCGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAAGGAC-CCGG 119

Qy   122 GTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGT 181
             || || |||||| ||||| |·| | |||||||||||||||||||| ||||||||||||||
Db   120 GTCCACGAGCTGGCCCACGTCCTCTGCAGGAAGGGACCCCGGGTCCACGAGCTGCCCACGT 179

Qy   182 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 241
             |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   180 CCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC 239

Qy   242 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCC--GGGTCACGAACTGCCCA 299
             ||||| ||||||||||||||||||||||||||||||||||||| || |||||||||||||

```
Db      240  CGGGTCCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTCCACGAACTGCCCA  299

Qy      300  CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA  359
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      300  CGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGA  359

Qy      360  CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC  419
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      360  CACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCATGAGCTGC  419

Qy      420  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCCCTCTCCAGGAGGG  478
             ||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||||
Db      420  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCCCTCTCCAGGAGGG  479

Qy      479  GACCCGGGT-CACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGT-CACGAGCTGC  536
             ||||||||| ||||||||||||||||||| |.||||||||||||||||| ||||||||||
Db      480  GACCCGGGTCCACGAGCTGCCCACGTCGTCAACGGGAAGGGACCCGGGTCCACGAGCTGC  539

Qy      537  CCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAACTGCCCACGCGCTCTCCAGGAGGG  595
             ||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||||
Db      540  CCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAACTGCCCACGCGCTCTCCAGGAGGG  599

Qy      596  GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT  655
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      600. GACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCT  659

Qy      656  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA  715
             ||||||||||||||||||||||||||||||||||.|||||||||||||||||||||||||
Db      660  GCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGA  719

Qy      716  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA  775
             ||||||||||||||||||||||||||||||||||||||||.|||||||||||||||||||
Db      720  GGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGA  779

Qy      776  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT-CACGAGCTGCCCACGTCCTCTCCAG  834
             ||||||||||||||||||||||||||||||||||| ||||||||||||||||||||||||
Db      780  GCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCACGTCCTCTCCAG  839

Qy      835  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG  894
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      840  GAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCCGGGTTCAG  899

Qy      895  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC  954
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      900  GTCTCCTGCCGGCCCACATCGTGCCTTTGTGTAAATCAGAAGAAAGATGAGGAACAGGCC  959

Qy      955  CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG  1014
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      960  CTCCTCTCTCTCCAGGCAGGCTTTGGTGGAGGGGCTGGATCTCCTGCCGCACCTTCCCTG  1019

Qy      1015 GCA-GGCACCCTGTCGTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG  1073
             ||| |||||||||| |||||||||||||||||||||||||||||||||||||||||||||
Db      1020 GCAGGGCACCCTGTGCTTGAGCCCCAGAACTGCAGGCGGCCGGCAGAGAAGGGGTCCATG  1079

Qy      1074 ATGGCGCCTCGGTGCG--GCCTTGGACCTGCCCCCATGGACCTGGA  1117
             ||||||||||||||||  |||||||||||||||||||||||||||||
Db      1080 ATGGCGCCTCGGTGCGCAGCCTTGGACCTGCCCCCATGGACCTGGA  1125
```

RESULT 6
US-10-743-704-4/c
; Sequence 4, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.
; APPLICANT: SIMON, JASON
; APPLICANT: ALLEN, KRISTINA
; APPLICANT: PANDIT, SUNIL
; TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
; FILE REFERENCE: 2976-4037
; CURRENT APPLICATION NUMBER: US/10/743,704
; CURRENT FILING DATE: 2003-12-22
; PRIOR APPLICATION NUMBER: US/09/627,465
; PRIOR FILING DATE: 2000-07-28
; PRIOR APPLICATION NUMBER: 60/211,749
; PRIOR FILING DATE: 2000-06-14
; PRIOR APPLICATION NUMBER: 60/146,336
; PRIOR FILING DATE: 1999-07-30
; NUMBER OF SEQ ID NOS: 51
; SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 4
; LENGTH: 1441
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (3)..(1166)
US-10-743-704-4

  Query Match   9.3%;   Score 130; DB 1; Length 1441;
  Best Local Similarity   51.7%;   Pred. No. 5;
  Matches 429; Conservative   0; Mismatches 390; Indels   10; Gaps   6;

Qy   52 CCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAG 111
             || | || ||| ||| | | || | ||| | |||·| || |||| |||| ||||
Db   893 CCGGGGTCCCTTCCTGGAAAGTGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAG 834

Qy   112 GGGACACCGGGTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAG 171
             |||| || | | | | | ||| | || |||| |||·|||| || | ||| |
Db   833 AGGACGTGGGCAGCTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTG 775

Qy   172 CTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAG 231
             || |||| |||| ||| || | || | ||| | || |||| |||| ||||| |·
Db   774 AACCCGGTGTCCCCTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTG 715

Qy   232 GAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCAC 289
             || |||| || | ||| | || | ||| |||| |||| |||| ||| || | |
Db   714 GAGAGGACGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAGAGGACGTGGGCAGCTC 655

Qy   290 GAACTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTC 349

```
             |        ||     ||||    |||  |||   || |     ||    | || |    ||    |||| |||.
Db    654  GTGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCTC  595

Qy    350  CAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTT  409
             | |||||  |   |    ||       ||  |   |||  |  ||   ||| |||   ||||    ||
Db    594  CTGGAGAGCGCGTGGGCAGTTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG  536

Qy    410  CATGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAACTGCCCACGCCCTCT  469
             |  | |    ||      |||  ||     | |       ||        |||  | ||| ||
Db    535  CTCGTGGACCCGGGTCCCTTCCCGTTGACGACGTGGGCAGCTCGTGGACCCGGGTCCCCT  476

Qy    470  CCAGGAGGGGACCCGGGTCACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGTCA-  528
             || |||||  ||  |   |||      |  | ||  |    ||  |  | ||| |   | || ||
Db    475  CCTGGAGAGGGCGTGGGCAGTTCGTGGACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG  416

Qy    529  --CGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCACGAACTGCCCACGCGCT  584
              |  |    ||     ||||   ||| ||| ||| || |   |||    |  ||      || |    | |
Db    415  CTCATGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCC  356

Qy    585  CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGG  644
             ||||  ||||  |||||     ||     | |||  |      ||    | ||  ||| |||   |||   ||
Db    355  CTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGTGGG  296

Qy    645  GTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGT  704
             ||| |     ||    |||||  |||  ||||  ||||   ||   | |||   ||   || ||
Db    295  CAGTTCGTGGACCCGGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGGT  236

Qy    705  CCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACAC  764
             ||   |||  ||||  ||||  ||||     ||   |  | ||      ||   | ||   |||  |||| ||||  ||||
Db    235  CCCTTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGT  176

Qy    765  CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAGCTG-CCCAC  823
             ||    | || |      ||     ||||  |||  | |   ||||   ||     |  |   | |||   .
Db    175  GGGCAGCTCGTGGACCCGGGGTCCCTTCCTGCAGAGGACGTGGCCAGCTCGTGGACCCGG  116

Qy    824  GTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTC  872
             |||||  |||  ||||  ||||  ||||    ||    |  | |     ||      | |||| |
Db    115  GTCCTTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGTCCCTTCC  67
```

RESULT 7
US-10-743-704-6/c
; Sequence 6, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.
; APPLICANT: SIMON, JASON
; APPLICANT: ALLEN, KRISTINA
; APPLICANT: PANDIT, SUNIL
; TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
; FILE REFERENCE: 2976-4037
; CURRENT APPLICATION NUMBER: US/10/743,704
; CURRENT FILING DATE: 2003-12-22

```
  Query Match                9.3%;   Score 130;  DB 1;  Length 1576;
  Best Local Similarity    51.7%;   Pred. No. 4.6;
  Matches   429;  Conservative   0;  Mismatches  390;  Indels  10;  Gaps    6;

Qy       52 CCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAG 111
            ||   | ||  ||| |||  | · |    ||   | ||| |   ||    |||| |||| ||||
Db      893 CCGGGGTCCCTTCCTGGAAAGTGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAG 834

Qy      112 GGGACACCGGGTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAG 171
            ||||    ||    | | |   |||    | || |||| |||    |||  | || |
Db      833 AGGACGTGGGCAGCTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTG 775

Qy      172 CTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAG 231
            ||     |||| |||| |||  || |   ||  | ||| |   ||     |||| |||| |
Db      774 AACCCGGTGTCCCCTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTG 715

Qy      232 GAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCAC 289
            ||  ||||    ||   | ||| |    ||  |||| |||| |||  |||| |||   |·|
Db      714 GAGAGGACGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAGAGGACGTGGGCAGCTC 655

Qy      290 GAACTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTC 349
            |     ||   |||| |||  ||| |||  || ||  | ||     ||  | ||  ||||| |||
Db      654 GTGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTC 595

Qy      350 CAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTT 409
            | ||||| |   |    ||   || |    ||| | ||  | || |||  || ||||   ||
Db      594 CTGGAGAGCGCGTGGGCAGTTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 536

Qy      410 CATGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAACTGCCCACGCCCTCT 469
            | | |   ||    ||| || |   | |    ||        ||| | || ||||
Db      535 CTCGTGGACCCGGGTCCCTTCCCGTTGACGACGTGGGCAGCTCGTGGACCCGGGTCCCCT 476

Qy      470 CCAGGAGGGGACCCGGGTCACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGGTCA- 528
            || |||| || |   |||       | ||| |   ·|| · | || |     || ||
Db      475 CCTGGAGAGGGCGTGGGCAGTTCGTGGACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 416

Qy      529 --CGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCACGAACTGCCCACGCGCT 584
            | | | ||   |||| ||| ||| || |  ||| | ||      || | | 
Db      415 CTCATGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCC 356
```

```
Qy   585 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGG 644
          ||||  ||||  ||||     ||    |  ||  |      ||    |  ||   ||| |||  ||||    ||
Db   355 CTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGTGGG 296

Qy   645 GTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGT 704
          || |    ||    ||||   |||  ||||  ||||     ||    | ||  |    ||    ||
Db   295 CAGTTCGTGGACCCGGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGGT 236

Qy   705 CCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACAC 764
          ||   |||  ||||  ||||     ||    | ||  |      ||    | ||   |||  ||||  ||||
Db   235 CCCTTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGT 176

Qy   765 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAGCTG-CCCAC 823
          ||    | ||| |    ||     ||||   ||| | |    ||||  ||    |   |   | |||
Db   175 GGGCAGCTCGTGGACCCGGGGTCCCTTCCTGCAGAGGACGTGGCCAGCTCGTGGACCCGG 116

Qy   824 GTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTC 872
          |||||  ||| |||| ||||    ||    | ||  |    ||    | |||| |
Db   115 GTCCTTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGTCCCTTCC 67
```

RESULT 8
US-10-743-704-2/c
; Sequence 2, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.
; APPLICANT: SIMON, JASON
; APPLICANT: ALLEN, KRISTINA
; APPLICANT: PANDIT, SUNIL
; TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
; FILE REFERENCE: 2976-4037
; CURRENT APPLICATION NUMBER: US/10/743,704
; CURRENT FILING DATE: 2003-12-22
; PRIOR APPLICATION NUMBER: US/09/627,465
; PRIOR FILING DATE: 2000-07-28
; PRIOR APPLICATION NUMBER: 60/211,749
; PRIOR FILING DATE: 2000-06-14
; PRIOR APPLICATION NUMBER: 60/146,336
; PRIOR FILING DATE: 1999-07-30
; NUMBER OF SEQ ID NOS: 51
; SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 2
; LENGTH: 1581
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (3)..(1307)
US-10-743-704-2

   Query Match   9.3%;   Score 130; DB 1; Length 1581;
   Best Local Similarity   51.7%; Pred. No. 4.6;

Matches 429; Conservative 0; Mismatches 390; Indels 10; Gaps 6;

```
Qy    52 CCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAG 111
         ||   | ||   ||| ||| | |   ||   | ||| |    ||   |||| |||| ||||
Db   893 CCGGGGTCCCTTCCTGGAAAGTGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAG 834

Qy   112 GGGACACCGGGTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAG 171
         ||||    ||   |  | |   |||  | ||| || |||| |||   ||   |  | || |
Db   833 AGGACGTGGGCAGCTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTG 775

Qy   172 CTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAG 231
         ||    |||| |||| |||| ||| || | |   ||   |||   ||   |||| ||||| |
Db   774 AACCCGGTGTCCCCTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTG 715

Qy   232 GAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCAC 289
         || |||| ||   | ||| |   || |||| |||| ||| |||| ||| |  ||   || |
Db   714 GAGAGGACGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAGAGGACGTGGGCAGCTC 655

Qy   290 GAACTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTC 349
         | .   ||   |||| ||| ||| ||| || | |   ||   ||| | |   |||| |||
Db   654 GTGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTC 595

Qy   350 CAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTT 409
         | ||||| |  |   |-|    || |   ||| | ||  || ||| ||| ||||   ||
Db   594 CTGGAGAGCGCGTGGGCAGTTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 536

Qy   410 CATGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAACTGCCCACGCCCTCT 469
         |   |   | ||    |||  ||  |  | |      ||    |   ||| | || ||
Db   535 CTCGTGGACCCGGGTCCCTTCCCGTTGACGACGTGGGCAGCTCGTGGACCCGGGTCCCCT 476

Qy   470 CCAGGAGGGGACCCGGGTCACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGTCA- 528
         || |||| || |   |||        |   | | |   || |  | || |   | || ||
Db   475 CCTGGAGAGGGCGTGGGCAGTTCGTGGACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 416

Qy   529 --CGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCACGAACTGCCCACGCGCT 584
           | |   ||    |||| ||| ||| || || |  ||   | ||    ||    | | |
Db   415 CTCATGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCC 356

Qy   585 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGG 644
         |||| |||| |||| |   |    ||   | || |   | || ||| ||| ||| ||   ||
Db   355 CTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGTGGG 296

Qy   645 GTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGT 704
         |||    ||   |||  | |||| ||| ||| |||| ||   |  | ||| |   | ||
Db   295 CAGTTCGTGGACCCGGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGGT 236

Qy   705 CCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACAC 764
         || ||| |||| |||| |   |    ||   | ||   | | || ||| ||| |||| |||
Db   235 CCCTTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGT 176

Qy   765 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAGCTG-CCCAC 823
         ||   |  | ||| |   | ||   |||| ||| |||| |   ||    | |   | |||
Db   175 GGGCAGCTCGTGGACCCGGGGTCCCTTCCTGCAGAGGACGTGGCCAGCTCGTGGACCCGG 116

Qy   824 GTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTC 872
         ||||| ||| |||| ||||   |    | ||| |   | |||  | |||| |
Db   115 GTCCTTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGTCCCTTCC 67
```

RESULT 9
US-10-743-704-10/c
; Sequence 10, Application US/10743704
; GENERAL INFORMATION:
; APPLICANT: KEITH, TIM
; APPLICANT: LITTLE, RANDALL D.
; APPLICANT: EERDEWEGH, PAUL VAN
; APPLICANT: DUPUIS, JOSEE
; APPLICANT: DEL MASTRO, RICHARD L.
; APPLICANT: SIMON, JASON
; APPLICANT: ALLEN, KRISTINA
; APPLICANT: PANDIT, SUNIL
; TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
; FILE REFERENCE: 2976-4037
; CURRENT APPLICATION NUMBER: US/10/743,704
; CURRENT FILING DATE: 2003-12-22
; PRIOR APPLICATION NUMBER: US/09/627,465
; PRIOR FILING DATE: 2000-07-28
; PRIOR APPLICATION NUMBER: 60/211,749
; PRIOR FILING DATE: 2000-06-14
; PRIOR APPLICATION NUMBER: 60/146,336
; PRIOR FILING DATE: 1999-07-30
; NUMBER OF SEQ ID NOS: 51
; SOFTWARE: PatentIn Ver 2.1
; SEQ ID NO 10
;   LENGTH: 1744
;   TYPE: DNA
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (3)..(1349)
US-10-743-704-10

    Query Match   9.3%;   Score 130; DB 1; Length 1744;
    Best Local Similarity   51.7%;   Pred. No. 4.2;
    Matches 429; Conservative   0; Mismatches 390; Indels   10; Gaps   6;

Qy   52 CCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAG 111
              || | || ||| ||| | | || | ||| | || |||| |||| ||||
Db   893 CCGGGGTCCCTTCCTGGAAAGTGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAG 834

Qy   112 GGGACACCGGGTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAG 171
              |||| || | | | ||| | || | || |||| |||| |||| || | ||| |
Db   833 AGGACGTGGGCAGCTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTG 775

Qy   172 CTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAG 231
              || |||| |||| ||| || || || | ||| | || |||| |||| |
Db   774 AACCCGGTGTCCCCTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTG 715

Qy   232 GAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCAC 289
              || |||| || | ||| | || |||| |||| ||| |||| ||| ||| ||
Db   714 GAGAGGACGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAGAGGACGTGGGCAGCTC 655

Qy   290 GAACTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTC 349

```
                 |      ||    ||||  |||  |||   || |     ||    | ||| |    ||    |||| |||
Db      654 GTGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTC 595

Qy      350 CAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTT 409
                 | ||||| |   |    ||     ||| |    ||| | |||  ||| |||   ||||     ||
Db      594 CTGGAGAGCGCGTGGGCAGTTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 536

Qy      410 CATGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAACTGCCCACGCCCTCT 469
                 |  | |   ||    |||  ||     | |    ||       ||| | ||| ||
Db      535 CTCGTGGACCCGGGTCCCTTCCCGTTGACGACGTGGGCAGCTCGTGGACCCGGGTCCCCT 476

Qy      470 CCAGGAGGGGACCCGGGTCACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGTCA- 528
                 ||  ||||| || |   |||       |  | ||  |     || |  | ||| |  |   || ||
Db      475 CCTGGAGAGGGCGTGGGCAGTTCGTGGACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 416

Qy      529 --CGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCACGAACTGCCCACGCGCT 584
                    |  |    ||    ||||  |||  |||  ||| |   |||    | |||    ||  | | |
Db      415 CTCATGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCC 356

Qy      585 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGG 644
                 ||||  |||| ||||  ||     ||    | | | |      ||   | ||  ||| |||   ||||   ||
Db      355 CTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGTGGG 296

Qy      645 GTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGT 704
                 || |      ||    |||| |||  ||||  ||||   ||   | ||| |    || ||
Db      295 CAGTTCGTGGACCCGGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGGT 236

Qy      705 CCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACAC 764
                 ||   |||  |||| ||||     ||     | ||| |    ||    | ||   |||  ||||   ||||
Db      235 CCCTTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGT 176

Qy      765 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAGCTG-CCCAC 823
                 ||     | ||| |      ||     |||| ||| | |  |||·| ||     |  |  | ||| 
Db      175 GGGCAGCTCGTGGACCCGGGGTCCCTTCCTGCAGAGGACGTGGCCAGCTCGTGGACCCGG 116

Qy      824 GTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTC 872
                 ||||| |||  |||| ||||     ||     | ||| |    || |   | |||| |
Db      115 GTCCTTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGTCCCTTCC 67
```

RESULT 10
US-10-743-704-8/c
; Sequence 8, Application US/10743704
; GENERAL INFORMATION:
;   APPLICANT: KEITH, TIM
;   APPLICANT: LITTLE, RANDALL D.
;   APPLICANT: EERDEWEGH, PAUL VAN
;   APPLICANT: DUPUIS, JOSEE
;   APPLICANT: DEL MASTRO, RICHARD L.
;   APPLICANT: SIMON, JASON
;   APPLICANT: ALLEN, KRISTINA
;   APPLICANT: PANDIT, SUNIL
;   TITLE OF INVENTION: NOVEL HUMAN GENES RELATING TO RESPIRATORY DISEASES AND
OBESITY
;   FILE REFERENCE: 2976-4037
;   CURRENT APPLICATION NUMBER: US/10/743,704
;   CURRENT FILING DATE: 2003-12-22

```
  Query Match                 9.3%;   Score 130;   DB 1;   Length 2010;
  Best Local Similarity   51.7%;   Pred. No. 3.6;
  Matches  429;  Conservative   0;  Mismatches  390;  Indels  10;  Gaps    6;


Qy       52 CCCACGCCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAG 111
            ||   | ||  ||| ||| . | |    ||   | || |    ||   |||| |||| ||||
Db      893 CCGGGGTCCCTTCCTGGAAAGTGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAG 834


Qy      112 GGGACACCGGGTTCATGAGCTGCCCACGCCCTTTCCAGGAAGGGACCCCGGGTTCACGAG 171
            ||||   ||    |  | |    |||  | || |||| ||| |||| |||| |  | || |
Db      833 AGGACGTGGGCAGCTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTG 775


Qy      172 CTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAG 231
              ||   |||| |||| |||  || |   ||   | ||| |   || ||||  |||| | |
Db      774 AACCCGGTGTCCCCTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTG 715


Qy      232 GAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCAC 289
            ||  |||| ||   | |||| |   || |||| |||| ||| |||| |||  |   | |
Db      714 GAGAGGACGTGGGCAGCTCGTGAACCCGGTGTCCCCTCCTGGAGAGGACGTGGGCAGCTC 655


Qy      290 GAACTGCCCACGTCCTCTCCAGGAAGGGACCCCGGGTTCACGAGCTGCCCACGTCCTCTC 349
            |     || ||||  ||| ||| || |   | |   || | | |    || |||| |||
Db      654 GTGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCCCTC 595


Qy      350 CAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGGGTT 409
            | ||||| |  |    || | | | ||   || | |||| || ||| ||| ||||   ||
Db      594 CTGGAGAGCGCGTGGGCAGTTCGTG-GACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 536


Qy      410 CATGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAACTGCCCACGCCCTCT 469
            |  |  |  |   |||   ||  | |||     ||    |    | |  ||| | || ||
Db      535 CTCGTGGACCCGGGTCCCTTCCCGTTGACGACGTGGGCAGCTCGTGGACCCGGGTCCCCT 476


Qy      470 CCAGGAGGGGACCCGGGTCACGAGCTGCCCACGTCGTCTCCAGGAAGGGACCCGGGGTCA- 528
            || |||| || | |   ||    |    | || | | |||   ||  ||| |   || ||
Db      475 CCTGGAGAGGGCGTGGGCAGTTCGTGGACCCGGGTCCCTTCCTGGAGAGGACGTGGGCAG 416


Qy      529 --CGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGG--TCACGAACTGCCCACGCGCT 584
              |  |  |  ||   ||| |||| ||| ||| |||  |  | || |   ||   || | |
Db      415 CTCATGAACCCGGGGTCCCTTCCTGGAGAGGGCGTGGGCAGCTCGTGAACCCGGTGTCCC 356
```

```
Qy    585 CTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCCGG 644
          ||||  ||||  ||||    ||    | ||| |    ||    | ||   ||| |||   ||||    ||
Db    355 CTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGTGGG 296

Qy    645 GTTCACGAGCTGCCCACGTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGT 704
            |  | |    ||    ||||   ||| |||| ||||    ||    | ||| |    ||    ||
Db    295 CAGTTCGTGGACCCGGGGTCCCTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGGT 236

Qy    705 CCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCCCTCTCCAGGAGGGGACAC 764
           ||   ||| ||||  ||||    ||    | ||| |    ||    | ||   ||| |||| ||||
Db    235 CCCTTCCTGGAGAGGACGTGGGCAGCTCGTGAACCCGGGGTCCCTTCCTGGAGAGGACGT 176

Qy    765 CGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGTCACGAGCTG-CCCAC 823
           ||    | ||| |    ||    ||||  ||| | |    ||||   ||    | |  | |||
Db    175 GGGCAGCTCGTGGACCCGGGGTCCCTTCCTGCAGAGGACGTGGCCAGCTCGTGGACCCGG 116

Qy    824 GTCCTCTCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGCACTTTC 872
          ||||| ||| ||||  ||||    ||    | ||| |    ||    | |||| |
Db    115 GTCCTTTCCTGGAGAGGACGTGGGCAGCTCGTGGACCCGGGTCCCTTCC 67


Search completed: October 24, 2006, 13:12:57
Job time : 3 secs
```

```
> o <
o| |o  IntelliGenetics
> o <

GENALIGN - Multiple Sequence Alignment Program
Release 5.4

Mon 23 Oct 106 16:32:10-PDT

Solution Parameters:

    Nucleic Alphabet      = Identity
    Output line length    = 80
    Compress              = Off
    Histogram             = Off
    Randomization         = Off

    AMINO-Res-length      = 2
    DELetion-weight       = 5.00
    LEngth-factor         = 0
    Matching-weight       = 1.00
    NUCLEIC-Res-length    = 4
    SPread-factor         = 50

Clustered order of selected sequences:

    1.  US-10-743-704-1    (1-10304)
    3.  US-10-743-704-4    (1-1441)
    2.  US-10-743-704-2    (1-1581)
    4.  US-10-743-704-6    (1-1576)
    6.  US-10-743-704-10   (1-1744)
    5.  US-10-743-704-8    (1-2010)

Needleman-Wunsch Alignment: (listed in Clustered order)
```

US-10-743-1   1 cgggcgtgTatatctcTtCatagagaGcgctcAgaCaGcGTgCgtcTAatcctgCgtCGataT
US-10-743-4   1 TCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCAGCTGCCCACGTCGT
US-10-743-2   1 TCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCAGCTGCCCACGTCGT
US-10-743-6   1 TCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCAGCTGCCCACGTCGT
US-10-743-10   1 TCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCAGCTGCCCACGTCGT
US-10-743-8   1 TCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCAGCTGCCCACGTCGT
consensus   tcacgagcTgccacgTcCtctccagGaagggAcccGggTtcacgAgctgcCcacGtcgt

US-10-743-1   62 aTagAAtctttAtCactGagtAgatagaaCgtACaTgaatgtacGaAcAGtcCagacGag
US-10-743-4   62 CTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCAGGAAAAGGACACCCGGGTC
US-10-743-2   62 CTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCAGGAAAAGGACACCCGGGTC
US-10-743-6   62 CTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCAGGAAAAGGACACCCGGGTC
US-10-743-10   62 CTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCAGGAAAAGGACACCCGGGTC
US-10-743-8   62 CTCCAGGAAGGGACCCGGGTCCACGAGCTGCCCAGCGTCCTCCAGGAAAAGGACACCCGGGTC
consensus   cTcCAggaagggAcCcggGtccAcgagctgcCacGtcctcCcaggaAaAGgacCccgggtc

US-10-743-1   123 tAacttgactaggataagataGacaGtAccaACtaatGagaCaaGAagaGggaAtcataTa
US-10-743-4   123 CACGAGCTGGCCACGTCCTCTGCGGAGGGACTGCCCACGTCCTC
US-10-743-2   123 CACGAGCTGGCCACGTCCTCTGCGGAGGGACTGCCCACGTCCTC
US-10-743-6   123 CACGAGCTGGCCACGTCCTCTGCGGAGGGACTGCCCACGTCCTC

CACGAGCTGGCCACGTCCTCTGCGGAGGGACCCGGGTGCCCACGTCCTC
US-10-743-1   123 ||||||||||||||||||||||||||||||||||||||
CACGAGCTGGCCACGTCCTCTGCGGAGGGACCCGGGTCCAGCTGCCCACGTCCTC
US-10-743-4   123 ||||||||||||||||||||||||||||||||||||||
CACGAGCTGGCCACGTCCTCTGCGGAGGGACCCGGGTCCAGCTGCCCACGTCCTC
US-10-743-2   123 ||||||||||||||||||||||||||||||||||||||
consensus   cAcgaggcggcacgtcctctGcgaGaaggaGACccgGtcCaGagctGcccAcgtecTc

US-10-743-1   184 gaatcatgtaGtCtgaGcTagcgagtgTcgaCAtGatcCaagcGaaAtacAgaCtatGa
US-10-743-4   184 TCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT
US-10-743-2   184 TCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT
US-10-743-6   184 TCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT
US-10-743-10   184 TCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT
US-10-743-8   184 TCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTCTCCAGGAAGGGACCCGGGT
consensus   tccaggaaggGaCcccGggTtcacgagcTgccCacGtcctcCtccaGaAagggAcccggGt

US-10-743-1   245 gaAgagGtaGaaataaTaagtanactGAgaagAGagggtcaTatgtacAtacaaatCagtaa
US-10-743-4   245 CCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGTCCT
US-10-743-2   245 CCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTCCACGTCCT
US-10-743-6   245 CCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTCCCACGTCCT
US-10-743-10   245 CCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTCCCACGTCCT
US-10-743-8   245 CCACGAGCTGCCACGTCCTCTCCAGGAAGGGACCCGGGTCCCACGTCCT
consensus   ccAcgaGctGcccacgTcctctccagGAaggGaCcccgggTccacgActgcccAcCgtect

US-10-743-1   306 agCaAtagAaattgaatacaTTataagcCacagttacagaaTTagcctAatttAacaacca
US-10-743-4   306 CTCCAGGAAGGGACCCGGGTTCACGAGCTGCCACGGG
US-10-743-2   306 CTCCAGGAAGGGACCCGGGTTCACGAGCTGCCACGGG
US-10-743-6   306 CTCCAGGAAGGGACCCGGGTTCACGAGCTGCCACGGG
US-10-743-10   306 CTCCAGGAAGGGACCCGGGTTCACGAGCTGCCACGGG
US-10-743-8   306 CTCCAGGAAGGGACCCGGGTTCACGAGCTGCCACGGG
consensus   ctCAggaAGggacccccgggTTcacgagCtgccacgctctcTccaggAGgggAcaccggg

US-10-743-1   367 TggcaagcggaGtatatCaaaCatagaagAGtaAaCtCatcgaccatCGgtaggaAacgaa
US-10-743-4   367 TTCACGAGCTGCCACGCCCTTCCCAGGGTTCATGAGCGTCCCACGTCC
US-10-743-2   367 TTCACGAGCTGCCACGCCCTTCCCAGGGTTCATGAGCGTCCCACGTCC
US-10-743-6   367 TTCACGAGCTGCCACGCCCTTCCCAGGGTTCATGAGCGTCCCACGTCC
US-10-743-10   367 TTCACGAGCTGCCACGCCCTTCCCAGGGTTCATGAGCGTCCCACGTCC
US-10-743-8   367 TTCACGAGCTGCCACGCCCTTCCCAGGGTTCATGAGCGTCCCACGTCC
consensus   TtcacgagctGcccacgCgccctCcCcaggagAGgggaccCcgggtcatgactgcccAcgtcc

US-10-743-1   428 TaaaggcgtcGaGAagacaaTaagaatCgtgttAaaCagcaatacaagaGaatagCacca
US-10-743-4   428 TCTCCAGGACGGGACCGGGACTGCCGACCTCCCACGGCGCCCTCCAGGAGGGGACCCGGGT
consensus

US-10-743-   733   TCACGAGCTGCCCACGGACCCGGGTTCACGAGGGGACACCGGGT
                     ||||||||||||||||||||||||||||||||||||||||||||
US-10-743-   733   TCACGAGCTGCCCACGGACCCGGGTTCACGAGCTGCCCACGTCCT
                     ||||||||||||||||||||||||||||||||||
US-10-743-   733   TCACGAGCTGCCCACGGACCCGGGTTCACGAGCTGCCCACGTCCT
                     ||||||||||||||||||||||||||||||||||
US-10-743-   733   TCACGAGCTGCCCACGGACCCGGGTTCACGAGCTGCCCACGTCCT
                     ||||||||||||||||||||||||||||||||||
US-10-743-   733-   TCACGAGCTGCCCACGGACCCGGGTTCACGAGCTGCCCACGTCCT
                     ||||||||||||||||||||||||||||||||||
US-10-743-   733   TCACGAGCTGCCCACGGACCCGGGTTCACGAGCTGCCCACGTCCT
consensus   tcaCgaGctgccCacgCgcccctCcagAgggaCaccGggttcacGagCtgcccAcGtCct

US-10-743-   794   CcaggcctgGGGcCtgGcGgCaggggatgaagtggaCagagCCccGcaaatccCtaacGtg
                     ||||||||||||||||||||||||||||||
US-10-743-   794   CTCCAGGAAGGGACCCGGGTCCACGAGCTGCTGCCCACGTCCTCTCTCCTCTCTCCAGGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   794   CTCCAGGAAGGGACCCGGGTCCACGAGCTGCTGCCCACGTCCTCTCTCCTCTCTCCAGGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   794   CTCCAGGAAGGGACCCGGGTCCACGAGCTGCTGCCCACGTCCTCTCTCCTCTCTCCAGGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   794   CTCCAGGAAGGGACCCGGGTCCACGAGCTGCTGCCCACGTCCTCTCTCCTCTCTCCAGGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   794   CTCCAGGAAGGGACCCGGGTCCACGAGCTGCTGCCCACGTCCTCTCTCCTCTCTCCAGGGGT
consensus   CtccaggaaGGgacCCgGGtccacgagctgcccacgtCctctcCCagGagggaCaccgGgt

US-10-743-   855   ggtgagcagtgagcCtgtgTggCtcgGagtgGctCgtttggGCTgTtgtCCtgCag
                     ||||||||||||||||||||||||||||
US-10-743-   855   TCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCGGGTTCAGGTCCTGCGGCCCA
                     ||||||||||||||||||||||||||||
US-10-743-   855   TCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCGGGTTCAGGTCCTGCGGCCCA
                     ||||||||||||||||||||||||||||
US-10-743-   855   TCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCGGGTTCAGGTCCTGCGGCCCA
                     ||||||||||||||||||||||||||||
US-10-743-   855   TCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCGGGTTCAGGTCCTGCGGCCCA
                     ||||||||||||||||||||||||||||
US-10-743-   855   TCACGAGCTGCCCACGCACTTTCCAGGAAGGGACCCGGGTTCAGGTCCTGCGGCCCA
consensus   tcacgagctgcccaCgcacTttCcagGAaggGacCCcgggTtcaGgtTcctgcCggCca

US-10-743-   916   CAaatgatgccaGgcctgAcggaAccAgtGcacgtccACcacgagctgcCcacgTCCtctC
                     ||||||||||||||||||||||||||||||
US-10-743-   916   CATCGTGCCTTTGTGTAAATCAGAAGATGAGGAAGATGAGGAACAGGCCCTCCTCTCCAGGC
                     ||||||||||||||||||||||||||||||
US-10-743-   916   CATCGTGCCTTTGTGTAAATCAGAAGATGAGGAAGATGAGGAACAGGCCCTCCTCTCCAGGC
                     ||||||||||||||||||||||||||||||
US-10-743-   916   CATCGTGCCTTTGTGTAAATCAGAAGATGAGGAAGATGAGGAACAGGCCCTCCTCTCCAGGC
                     ||||||||||||||||||||||||||||||
US-10-743-   916   CATCGTGCCTTTGTGTAAATCAGAAGATGAGGAAGATGAGGAACAGGCCCTCCTCTCCAGGC
                     ||||||||||||||||||||||||||||||
US-10-743-   916   CATCGTGCCTTTGTGTAAATCAGAAGATGAGGAAGATGAGGAACAGGCCCTCCTCTCCAGGC
consensus   CAtcgtgcctttGtgtaaAtcagAagAagAatgaggaaCaggccctcctctcctcCcagGc

US-10-743-   977   caGgaaGGgaccccGGGtCcacgagGGtCCcacgagctgccacgagGaccgaagacCac
                     || || C   GCA   CTT
US-10-743-   977   AGGCTTTGGTGAGGGGCTGGATCTCCT   C   CTT
                     || || C — U — U   GCA   —   CTT
US-10-743-   977   AGGCTTTGGTGAGGGGCTGGATCTCCT   C   CTT
                     || || C — U — U   GCA   —   CTT
US-10-743-   977   AGGCTTTGGTGAGGGGCTGGATCTCCT   C   CTT
                     || || G — U — U   GCA   —   C
US-10-743-   977   AGGCTTTGGTGAGGGGCTGGATCTCCT   C   CTT
                     || || G — G — G   GCA   —
US-10-743-   977   AGGCTTTGGTGAGGGGCTGGATCTCCT   C   CTT
consensus   agGcttttGGtggaGGgCtggatctcct-c-g--cct--cC-ggcaggGcac-c-g--Ctt

US-10-743-   428   TCTCCAGGAAGGACCCGGGTTCACGAACTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGACCCGGGT
                     |||||||||||||||||||||||||||||||||||||||||||||
US-10-743-   428   TCTCCAGGAAGGGACCCGGGTTCACGAACTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGACCCGGGT
                     |||||||||||||||||||||||||||||||||||||||||||||
US-10-743-   428   TCTCCAGGAAGGGACCCGGGTTCACGAACTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGACCCGGGT
                     |||||||||||||||||||||||||||||||||||||||||||||
US-10-743-   428   TCTCCAGGAAGGGACCCGGGTTCACGAACTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGACCCGGGT
                     |||||||||||||||||||||||||||||||||||||||||||||
US-10-743-   428   TCTCCAGGAAGGGACCCGGGTTCACGAACTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGACCCGGGT
consensus   TctccagGaaGGacccgggTtcacgaaCtgcccaCgtccttcccagGagGGgacccGgggt

US-10-743-   489   CtgaagcagaCaAaGgCGTCaCGGGgaAaGtAgggaaGagggcacctCacaaggaGaggaa
                     |||||||||||||||||||||||||||||
US-10-743-   489   CCACGAGCTGCCCACGTCGTCAACGGGTCAACGGGGACCCGGGTCCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   489   CCACGAGCTGCCCACGTCGTCAACGGGTCAACGGGGACCCGGGTCCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   489   CCACGAGCTGCTCGTCGTCAACGGGTCAACGGGGACCCGGGTCCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   489   CCACGAGCTGCCCACGTCGTCAACGGGTCAACGGGGACCCGGGTCCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   489   CCACGAGCTGCCCACGTCGTCAACGGGTCAACGGGGACCCGGGTCCACGAGCTGCCCACGTCCTC
consensus   CcacgagctgcCcAcgtCGTCAaCGGGaAcGGGgAcccgggVtccacgagCtgcccaCgtcctc

US-10-743-   550   agggcagtcctgattttGaaaAtttcagtgaaAaGacagtgtgttcccGGAggcaGctTa
                     |||||||||||||||||||||||||||
US-10-743-   550   TCCAGGAAGGGACCCGGGTCTTCCAGGAGGGACCCGGGTCCACGAGCTGCCCACGTCCGGT
                     |||||||||||||||||||||||||||
US-10-743-   550   TCCAGGAAGGGACCCGGGTCCGCCCTCTCCAGGAGGGACCCGGGTCCACGAGCTGCCCACGTCCGGT
                     |||||||||||||||||||||||||||
US-10-743-   550   TCCAGGAAGGGACCCGGGTCCGCCCTCTCCAGGAGGGACCCGGGTCCACGAGCTGCCCACGTCCGGT
                     |||||||||||||||||||||||||||
US-10-743-   550   TCCAGGAAGGGACCCGGGTCCGCCCTCTCCAGGAGGGACCCGGGTCCACGAGCTGCCCACGTCCGGT
                     |||||||||||||||||||||||||||
US-10-743-   550   TCCAGGAGGGACCCGGGTCCGCCCTCTCCAGGAGGGACCCGGGTCCACGAGCTGCCCACGTCCGGT
consensus   tccaggaaggggacccgggGtcAcgacgagctgcccacgCtgcccacgagGcggCCggTa

US-10-743-   611   gtgatccCgCatcgaCtCTgaagAGGAcccctgagggtaGgggAtttttggGCtgacCggC
                     |||||||||||||||||||||||||||||
US-10-743-   611   CACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   611   CACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   611   CACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   611   CACGAGCTGCCCACGCCCTCTCCAGGAAGGGACCCGGGTTCACGAGCTGCCCACGTCCTC
                     |||||||||||||||||||||||||||||
US-10-743-   611   CACGAGCTGCCCACGCCCTCTCCAGGAGGGACCCGGGTTCACGAGCTGCCCACGTCCTC
consensus   cacgagctgcccacggtccAcgaCgagctgcccacgCtgcCCacgagGaGgggacaccGggt

US-10-743-   672   ctatGctGaacgCccagCgCCCacgCGgggCCccgGcttccaggaGaGc
                     ||||||||||||||||||||||||||||||
US-10-743-   672   TCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGGACACCGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   672   TCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGGACACCGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   672   TCCAGGAGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGGACACCGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   672   TCCAGGAGGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGGACACCGGGT
                     ||||||||||||||||||||||||||||||
US-10-743-   672   TCCAGGAGGGGGACACCGGGTTCACGAGCTGCCCACGTCCTCTCTCCTCTCTCCAGGAGGGGGACACCGGGT
consensus   tccaGgaGGgaCaCcggGtcGccCagCTgcccAcgagctgcccaCgtCctctctCCagGagggacaccGggt

US-10-743-   733   agcCagGCcagCgCCcagcGgGCAaacccCACCcaGgaccccCACCcaGGcacGcgtGagagagAgCcgC

US-10-743- 1038 ggaaggggaCccggtccacGagctgccacgtcctCtccaggaaggggacccgggttcacg
US-10-743- 1015 GC
US-10-743- 1015 A GC
US-10-743- 1015 G C T G GGAACCTCCCGGC
US-10-743- 1015 TG G T G GGAACCTCCCGGC
US-10-743- 1015 TG G T G GGAACCTCCCGGC
US-10-743- 1038 aGccCCCtCAgggctcTGcGccacctcaAccCaggCgtttgtTccGccacGAACCTCCCGGC
consensus   -G-cccc-Ca-gg-tctgcG------c-ac-c----C----g--t--g-aggaacctcccgc

US-10-743- 1099 agcTgcccacgtcctctccaggaaggggacccgggttcacgagctgccacgtcctctcca
US-10-743- 1035 C T G
US-10-743- 1100 C T G
US-10-743- 1137 TCTT C CTC GGG A A G A
US-10-743- 1137 TCTT C CTC GGG A A G A
US-10-743- 1137 TCTTCCCACTCGGGAAAGGAAGGCTCTTGGGCATGGAGGTCGGCCAGGCCCATCCCGTAC
US-10-743- 1404 TCTTCCCACTCGGGAAAGGAAGGCTCTTGGGCATGGAGGTCGGCCAGGCCCATCCCGTAC
consensus   tcttcccactcgggaaaggaaggctcttgggcatggaggtcggccaggcccatcccgtac

US-10-743- 1465 ggagggacccgggtcacgagctgccacgtcctctccaggaaggggacccgggtcac
US-10-743- 1105 A
US-10-743- 1157 G A G
US-10-743- 1157 G A G
US-10-743- 1198 CCTGGGCCCTTCTTCCTGCTTCCTGTTTGTCACTGCCCCGGGGCCTTTGCACCTGCATTCCC
US-10-743- 1465 CCTGGGCCCCTTCTTCCTGCTTCCTGTTTGTCACTGCCCCGGGGCCCTTTGCACCTGCATTCCC
consensus   cctggccctcttcctgcttcctgtttgtcactgccccggggcctttgcacctgcattccc

US-10-743- 1526 gagctgccacgtcgtcgtccccagagctgccacgtctcctcca
US-10-743- 1106 C
US-10-743- 1160 G G CA T G GG
US-10-743- 1160 G G CA T G GG
US-10-743- 1259 TCTCTGTGAGTGTCCTGGGGCCCGTACCGTCACCGTCACCGTCCCAGGATACCTTTTCTTT
US-10-743- 1526 TCTCTGTGAGTGTCCTGGGGCCCGTACCGTCACCGTCACCGTCCCAGGATACCTTTTCTTT
consensus   tctctgtgagtgtcctggggcccgttaccgtcacccgtCacgtcccaggatacctttcttt

US-10-743- 1587 ggaaaggaccccgggtccacgagagctgccacgtcCtctgcAgaagaggacccgggtcacg
US-10-743- 1108 T G C CCCC A
US-10-743- 1172 AGtTcggccagGGcccCAcCCCCgtAccCtgGcCCctTcTccgCct
US-10-743- 1172 AGCTTTATTGAGTGAGTATAGTTGACAATTCAGGAGCGTGTGCACTCAA
US-10-743- 1320 TCTTTCTCTCTCCAGCTTTATTGAGTGAGTATAGTTGACAATTCAGGAGCGTGTGCACTCAA
US-10-743- 1587 TCTTTCTCTCTCCAGCTTTATTGAGTGAGTATAGTTGACAATTCAGGAGCGTGTGCACTCAA
consensus

(rotated sequence alignment, lower block)

US-10-743- 1038 gagctgCccacgccctctccaggaGgggacaccGGGtCacgAgctgcCCacgtcctctcc
US-10-743- 1015 CC GGC A GGG C A G G
US-10-743- 1015 CC CT GGC A GGG C A G G
US-10-743- 1015 CC CT GGC A GGG C A G GT
US-10-743- 1015 CC CT GGC A GGG C A G GT
US-10-743- 1015 CC CT GGC A GGG C A G G
US-10-743- 1038 gagcccCagaaCTgcaggcggcCGGCagagaAgGGtcCatgAtggCGCTcgGCTgcgcaG
consensus   gagc-cC-a-ct-c----gGc-ga-aa-gGGt-Ca-gA---c-CCtcggt-----g

US-10-743- 1099 aggaggggacaccgggttcatgagctgccCacgcccctccaggaaggggaccccggGttca
US-10-743- 1035 C T TG A G CC CCA GA GCAG G
US-10-743- 1035 C T TG A G CC CCA GA GCAG G
US-10-743- 1035 C T TG A G CC CCA GA GCAG G
US-10-743- 1035 C T TG A G CC CCA GA GCAG G
US-10-743- 1099 cCtTggaccTGcccccAtgGaCCtggatgCCagtGAtgcctgAggtCTtgcaggGCAGtGca
consensus   -c-tgg---at-g-cc-----Ccag-gat--c--ag--ctg----gcaGgca

US-10-743- 1160 cgaGctgcccaCgtcctctccaggaggggacaccggGttcacgagctgccacgtcctcctc
US-10-743- 1056 CG GCC G G AA G
US-10-743- 1056 CG GCC G G AA G
US-10-743- 1056 CG GCC G G AA G
US-10-743- 1056 CG GCC G G AA G
US-10-743- 1056 CG GCC G G AA G
US-10-743- 1160 taCGctcaccGCCtgCcGCctgcGctCagGag------c--G-c-aaat-cgc-c---ctc
consensus   --cGct--ccgCct-g-cgc-caggag----c--G-c-agga-c-c----ctc

US-10-743- 1221 cagGaagggacccaggtccacgaActgccacgcccctccaGgagGggacccgggtcCac
US-10-743- 1071 GG G TCCATGA T G C C C
US-10-743- 1071 GG G TCCATGA T GC CT C
US-10-743- 1071 GG G TCCATGA T GC CT G C
US-10-743- 1071 GG G TCCATGA T GC CT G C
US-10-743- 1071 GG G TCCATGA T GC CT G C
US-10-743- 1221 cctGttaccGGCtcacctccctTCCATGAgggccctTccccaggGacaGcCgatGCtCTcCtg
consensus   c--G-----ggc----tcc-tccAtga----c----G----gc-ctcC--

US-10-743- 1282 gagctgccacgtcgtctccaggaaggggacccgggtccacgagctgccacgtcctcctcca
US-10-743- 1088 T T GG G
US-10-743- 1090 GG TG C GC A G CCT TGGA
US-10-743- 1090 GG TG C GC A G CCT TGGA
US-10-743- 1090 GG TG C GC A G CCT TGGA
US-10-743- 1282 atGGctccTGccCTgcaGAgtgctgccccgcgctGccacACCTggccTGGAccctcgcCTg
consensus   --gg--cctgc-c--gc--a--g--g----cc----gcc--cct----ctgga--c---cct

```
consensus                 tcttctctctcccagttcattgaggtatag-t-acaAttcaggacgtgtgcactcaa
US-10-743- 1648  agctgccccagtcctctccaggaagggacccccGgttcacgagctgccacgtcctcTcCa
US-10-743- 1116          TG    G   A        CC  TG       G         AGACAGGGTTTCT
US-10-743- 1218  ccTGTtGtcActgCcccCggCCcggCcttTgcAcctGcattccctctcctAGACAGGGTTTCT
US-10-743- 1218  GGTATGCAGCATCACAACCTGACACACAGTA     GGCATTGTGAAATGAGTCCCACAATTGGG
US-10-743- 1381  GGTATGCAGCATCACAACCTGACACACAGTA     GGCATTGTGAAATGAGTCCCACAATTGGG
US-10-743- 1648  GGTATGCAGCATCACAACCTGACACACAGTA     GGCATTGTGAAATGAGTCCCACAATTGGG

consensus        ggtatgcagcatcacaacctgacacacgtaccgGcattgtgaaatgagtcccacaatTg-g
US-10-743- 1709  ggaagggaccCCgGgTtcaCgaGctgcCCacgtCcctcTcaggaagggacCCcggGtCcaC
US-10-743- 1138  CCTCATTGGCCAGGCTGTCTCGAACTCCTGACCTCAGACGATCCACCTGCCTCAGCCTCC
US-10-743- 1279  CCTCATTGGCCAGGCTGTCTCGAACTCCTGAGCCTCAGACGATCCACCTGCCTCAGCCTCC
US-10-743- 1277  CTAATTAACACACACCCATCACCTTACATGGTTACTTCTTTCTGTGGTGAGAACACTAAAT  T
US-10-743- 1440  CTAATTAACACACACCCATCACCTTACATGGTTACTTCTTTCTGTGGTGAGAACACTAAAT  T
US-10-743- 1707  CTAATTAACACACACCCATCACCTTACATGGTTACTTCTTTCTGTGGTGAGAACACTAAAT  T

consensus        ctaattaac-Ca--c-tcaCct-acat--ttac-tctttCgtgtgtgaga-Cact-a-tc-
US-10-743- 1770  gaActgccacgtcctctccaggaAGgacACccGggttcacgagctgCCacgTcCTctcc
US-10-743- 1199  CGAAGTGTTGGGATTACAGGCACGAGCCACCTGCCCGGCCATCATTCCTTTTACTGCTG
US-10-743- 1340  CGAAGTGTTGGGATTACAGGCACGAGCCACCTGCCCGGCCATCATTCCTTTTACTGCTG
US-10-743- 1337  TTAAATAGAGGACACACA   GCCTGGGCAACATAGTGAGACCCT  GTCTCTACAAATATAAA
US-10-743- 1500  TTAAATAGAGGACACACA   GCCTGGGCAACATAGTGAGACCCT  GTCTCTACAAATATAAA
US-10-743- 1767  TTAAATAGAGGACACACA   GCCTGGGCAACATAGTGAGACCCT  GTCTCTACAAATATAAA

consensus        ttAaatagagg-cacaCaggcctg-GcaACataGtgagaccctcgTc-Ctaca-a--taaa
US-10-743- 1831  AggAgggGaCacCGgGtTcAcgagctgccCacgctgcCtCtcaggaAGgacccccgggTtca
US-10-743- 1260  ACTAATAGTCTGCTGTGTGAATCACCCGTAGAAACCCACTTCATCAGTTGATGGTCATGTG
US-10-743- 1401  ACTAATAGTCTGCTGTGTGAATCACCCGTAGAAACCCACTTCATCAGTTGATGGTCATGTG
US-10-743- 1396  AAAATTATTATCTCGACGTGGTGTGCACCTGGTCTGTGTGTCCTGTGTCTGTTGGAAGCTGAGGGCTG
US-10-743- 1559  AAAATTATTATCTCGACGTGGTGTGCACCTGGTCTGTGTGTCCTGTGTCTGTTGGAAGCTGAGGGCTG
US-10-743- 1826  AAAATTATTATCTCGACGTGGTGTGCACCTGGTCTGTGTGTCCTGTGTCTGTTGGAAGCTGAGGGCTG

consensus        AaaAtta-c-gg-cGtg--t-gtgcacacCt-tggtcCCa--ctact-Gggaagctgag-ctg
US-10-743- 1892  tGagctgcCcacgtcctctccAggaAggacccGgtccAcgaAACtgcCCacgCcctctcc
US-10-743- 1321  GGTTGCTTCTGCTTCTGCTCGTTATTCGCTTATTATGAACAGTTCTGAATAAACGTTCCTGTGCACTCTT
US-10-743- 1462  GGTTGCTTCTGCTTCTGCTCGTTATTCGCTTATTATGAACAGTTCTGAATAAACGTTCCTGTGCACTCTT
US-10-743- 1457  GAGAATCACTTGAGCCTGGGAGGCGGAGGCGGAGGTTGCGGTGCACTCTGCAGCCTCCAGCCTGTGCACTCTGGGCGCGACAGAGGG
US-10-743- 1620  GAGAATCACTTGAGCCTGGGAGGCGGAGGCGGAGGTTGCGGTGCACTCTGCAGCCTCCAGCCTGTGCACTCTGGGCGCGACAGAGGG
```

```
US-10-743- 1887  GAGAATCACTTGAGCCTGGGAGGCGGAGGCGGAGGTTGCGGTGCACTCCAGCCTGCGGGCGCACGAGGGG
consensus        g-gaatcaCtt-agcctggga-gc-g-ggttgcGgtgca-tc-A-cct--gcgaCagaggg
US-10-743- 1953  aGGaggggaCCcgGGtccacgAgctgccacgctgtcAAcgggaagggAcccgggtccAcg
US-10-743- 1382  GGGCATACGCCTAGGAGTGGAACTGCTGCTGGGTCAaAAAAAAAAA
US-10-743- 1523  GGGCATACGCCTAGGAGTGGAACTGCTGCTGGGTCC    AAAAAAAAA
US-10-743- 1518  AGGCCCTATCTCAAAATAAATAAATAAAAGGAC  ACATTCTTATC
US-10-743- 1681  AGGCCCTATCTCAAAATAAATAAATAAAAGGAC  ACATTCTTATCaAAAAAAAAAAAAAAAAA
US-10-743- 1948  AGGCCCTATCTCAAAATAAATAAATAAAAGGAC  ACATTCTTATC AAAAAAAAAAAAAAAA

consensus        aGGccctatC-ca--ataaatAaataaggac-acat--ttatcaaaaatgaaaaAaa
US-10-743- 2014  Agctgccacgtcctctccaggaagggacccgggtccacgaactgccacgcgctctccag
US-10-743- 1438  AAAA
US-10-743- 1578  AAAA
US-10-743- 1573  AAAA
US-10-743- 1741  AAAA
US-10-743- 2007  AAAA

consensus        Aaaagcccacgtcctctccaggaagggacccgggtccacgaactgccacgcctcccag
US-10-743- 2075  gagggggacaccgggtccacgagctgccacgcctctccaggaagggacccgggttcacg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        gagggggacaccgggtccacgagctgccacgcctctccaggaagggacccgggttcacg
US-10-743- 2136  agctgccacgtcctctccaggagggggacaccgggtccacgagctgccacgctcctcca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        agctgccacgtcctctccaggagggggacaccgggtccacgagctgccacgtcctctcca
US-10-743- 2197  ggaggggacaccgggtccacgagctgccacgcctctccaggagggggacaccgggttcac
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
```

```
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        aggcaccctgtgctgagcccagaactgcaggcggccggcagagaagggtccatgatg
US-10-743- 2563  gcgcctcggtgcgcagcccttggacctgcccctgggtgaggacttccagccct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        gcgcctcggtgcgcagccttggacctgcccccatggacctgggtgaggacttccagccct
US-10-743- 2624  tccccggctccagctgctctcccctaagcgcctcaccccttcctcgggcagggggcagtgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        tccccggctccagctgctctccctaagcgcctcaccccttcctcgggcagggggcagtgg
US-10-743- 2685  acgagggttccgtccctccaggggatgtccccaaaccctgccaggactggcagatccgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        acgagggttccgtccctccaggggatgtccccaaaccctgccaggactggcagatccgg
US-10-743- 2746  ccctcatcttgcagctagatggtgggacggatcatcgtggcgcttaattgcattt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        ccctcatcttgcagctagatggtgggacggatcatcgtggcgcttaattgcattt
US-10-743- 2807  cctgatgactgatgattcgagcatcctcatgtttgctgcttgggggatagagat
US-10-743- 1442
```

```
US-10-743- 1745
US-10-743- 2011
consensus        ggaggggacaccgggttcacgagctgcccacgccctctccaggaggggacaccggtccac
US-10-743- 2258  gagctgcccacgtcctctccaggaggggaccgggtccacgagctgcccacgtcctctcca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        gagctgcccacgtcctctccaggaggggaccgggtccacgagctgcccacgtcctctcca
US-10-743- 2319  ggaggggacaccgggttcacgagctgcccacgccctctccaggaggggaccccgggttcag
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        ggaggggacaccgggttcacgagctgcccacgcacttccaggaaggggaccccgggtcag
US-10-743- 2380  gtctcctgcggccgccacatcgtgcctttgtgtaaatcagaggaaagatgaggaacaggccc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        gtctcctgcggccgccacatcgtgcctttgtgtaaatcagaggaaagatgaggaacaggccc
US-10-743- 2441  tccctctctccaggcaggcttggtggagggggctggatctcctgccgcacctcccctggc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        tccctctctccaggcaggcttggtggaggggctggatctcctgccgcacctcccctggc
US-10-743- 2502  aggcaccctgtgctgagcccccagaactgcaggcggccggcagagaaggggtccatgatg
US-10-743- 1442
US-10-743- 1582
```

```
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011    cctgatgactgatgattcgagcatcctccttcatatgttgtcggcttggggatagagat
consensus
US-10-743- 2868    attctcctaaagcaaaacttgattatgtcattctgcttcaagatgccagtgatgcctg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          attctcctaaagcaaaacttgattatgtcattctgcttcaagatgccagtgatgcctg
US-10-743- 2929    aggtctgcagggcagtgcatacgctcaccgcctggccgctgtgtgcttgacccc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          aggtctgcagggcagtgcatacgctcaccgcctggccgctcaggagcctgtgctgacccc
US-10-743- 2990    caaatccgcccccaactccctgttaccggctcactcctccatgagggggcctccccagg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          caaatccgcccccaactccctgttaccggctcactcctccatgagggggcctccccagg
US-10-743- 3051    gacagccgatgctgtcctgatgggctcctgccttgcagagtgctgccccgcctgccacc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          gacagccgatgctgtcctgatgggctcctgccttgcagagtgctgcccccgcctgccacc
US-10-743- 3112    tggcctgaccctcgcctgagcccccaggggctctgcgccacctcaaccaggcgttgt
```

```
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011    tggcctgaccctcgcctgagcccccaggggctctgcgccacctcaaccaggcgttgt
consensus
US-10-743- 3173    tccgcaggaacctcccggctctcccactcgggaaaggaaggctctgggcatggaggtcgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          tccgcaggaacctcccgctctcttcccactcgggaaaggaaggctctgggcatggaggtcgg
US-10-743- 3234    ccaggcccatcccgtacccggcccttctcctgttcctgttgtcactgccccgggg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          ccaggcccatcccgtacccggccctcctcctgttgtgcactgcccccgggg
US-10-743- 3295    cccttgcacctgcgattcctcctcctcgtgagtgtcctggggcccgttaccagtcaccgt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          cccttgcacctgcgattcctcctcctctgtgagtgtcctggggcccgttaccagtcaccgt
US-10-743- 3356    cccaggatacctttcttcttctctctctcctccagcttattgaggtatagttgacaatt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          cccaggatacctttcttcttctctctcctccagcttattgaggtatagttgacaatt
```

```
US-10-743- 3417  caggacggtgtgcactcaaggtatgcagcatcacaacctgacacacgtaggcattgtgaaa
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        caggacggtgtgcactcaaggtatgcagcatcacaacctgacacacgtaggcattgtgaaa

US-10-743- 3478  tgagtcccacaattgggctaattaacacacccatcacccttacatggttacttctttctgtg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        tgagtcccacaattgggctaattaacacacccatcacccttacatggttacttctttctgtg

US-10-743- 3539  gtgagaacactaaatttaaatagaggacacagcctggcaacatagtgagaccctgtc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        gtgagaacactaaatttaaatagaggacacagcctggcaacatagtgagaccctgtc

US-10-743- 3600  tctacaaatataaaaaattatctgacgtggtgtgcacacctggtcccagctacttg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus        gtgagaacactaaatttaaatagaggacacagcctggcaacatagtgagaccctgtc

US-10-743- 3661  ggaagctgaggctgggagaatcactctgagcctggaggcggaggttgcggtgcactccagcc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
```

```
consensus        ggaagctgaggctgggagaatcactctgagcctggaggcggaggttgcggtgcactccagcc
US-10-743- 3722  tgggcgacagaggggaggccctatctcaaataaataataaaggacacattcttatcagct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        tgggcgacagagggaggccctatctcaaataaataaggacacattcttatcagct
US-10-743- 3783  gtagtcaccacgttcattacatcttagaacccgctaatctcataactgcacccttgttccc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        gtagtcaccacgttcattacatcttagaacccgctaatctcataactgcacccttgttccc
US-10-743- 3844  tgtgaccctcaactccggtccctccagcctgacagccactgttcactctgcttctgtg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        tgtgaccctcaactccggtccctccagcctgacagccactgttcactctgcttctgtg
US-10-743- 3905  agttccgctttttcacacgtcactcgagtgaggccatgtgtgctgtttgctttctgtgctg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus        agttccgctttttcacacgtcactcgagtgaggccatgtgtgctgtttgctttctgtgctg
US-10-743- 3966  gcttatctcacttaccacaaatgcccttcaggttcatcgtgcctcacaaatggcgggctt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
```

US-10-743- 1745
US-10-743- 2011
consensus   gacgcctcctacacgctaattcaactccttggatatacacccagcagtgggattgctg
US-10-743- 4332 gatcaggtgggagctctattcccacatttttgaggaccccctgccgtcccatggtgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   gatcaggtgggagctctattcccacatttttgaggaccccctgccgtcccatggtgg
US-10-743- 4393 ctgtgccaacgacgttcccaggacagagtgcaacgggcccttcctccatgtcctcgcc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   ctgtgccaacgacgttcccaggacagagtgcaacgggcccttcctccatgtcctcgcc
US-10-743- 4454 aacactcgctatctttgcgtttgatgacagtcatcccaataggtgccagtggtacctc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   aacactcgctatctttgcgtttgatgacagtcatcccaataggtgccagtggtacctc
US-10-743- 4515 ctgtggtttcattgattcctgatgatagtgctgacgttattcgtctacact
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   ctgtggtttcattgattcctgatgatagtgctgacgttattcgtctacact
US-10-743- 4576 tcggccacttacatgtttcctcgagacacgcagattcaggtcccttgcacgtttaaa
US-10-743- 1442
US-10-743- 1582

US-10-743- 2011
consensus   gcttactctcacttaccacaaatgccctcaggttcatcgtgtcctcacaaatggcgggctt
US-10-743- 4027 gccctgcccctgcccctgcccctgccctccctcctctctctctctctctctccctttctctct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   gccctgcccctgcccctgcccctgccctccctcctctctctctctctctctccctttctctct
US-10-743- 4088 ctctggctctctctctctcccaccccttccctcctccctctgggaataacactcctgtgtg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   ctctggctctctctctctcccaccccttccctcctccctctgggaataacactcctgtgtg
US-10-743- 4149 tgtgtgcatgcatgtgtgtatattctcacatatttcattcatgcatccgtgatgga
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   tgtgtgcatgcatgtgtgtatattctcacatatttcattcatgcatccgtgatgga
US-10-743- 4210 cacttgggttgattccgtgtcctgtgctcggctgggacagtgctcgatgaacgagggtaca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   tgtgtgcatgcatgtgtgtatattctcacatatttcattcatgcatccgtgatgga
US-10-743- 4271 gacgcctcctacacgctaattcaactccttggatatacacccagcagtgggattgctg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577

genalign.rec

US-10-743- 1577
US-10-743- 1745
US-10-743- 2011   tcggccactacatgtttccctcgagacacgcagattcaggtccttgcacgtttaaaa
consensus
US-10-743- 4637   tttttttgttgtttgtttgtattgagtgaatccctctcacaattgcaaattaactcct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   tttttttgttgtttgtattgagtgaatccctctcacaattgcaaattaactcct
US-10-743- 4698   catcatatacatggattgcaaatacccccgcctcccccctggggtttgcctttcactgca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   catcatatacatggattgcaaataccccgcctcccccctggggtttgcctttcactgca
US-10-743- 4759   aatactccgcctccccatggggggttgcctttccctgccaataccccccacctcccccatgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   aatactcccgcctccccatggggggttgcctttccctgcaataccccccacctcccccatgg
US-10-743- 4820   gggttgcctttccctgcaataccccccacctcccccgtgggtctgcctttcccctgccaa
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   gggttgcctttccctgcaataccccccacctcccccgtgggtctgcctttccccctgccaa
US-10-743- 4881   taccccgcctccccctggggttgcctttcactctgtgttggttccttttgcggaagcttt
US-10-743- 1442

US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   taccccgcctccccctggggttgcctttcactcgtgttggttccttgcggaagcttt
US-10-743- 4942   ctggttgttgcactcactgctctattttgtgctcgtcgtgcctgctgtgtgtgggcata
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   ctggtttgttgcactcactgctctattttgtgctcgtcgtgcctgctgtgtgtgggcata
US-10-743- 5003   tttaaaaaatcatgccggacaccagctcaagagagtttcctcctacgtttcttctaa
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   tttaaaaaaatcatgccggacaccagctcaagagagtttcctcctacgtttcttctaa
US-10-743- 5064   gagtttatggtgtcggtcggtctcggtgttgaatcttaatccgtgttgagttgattttcgta
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   gagtttatggtgtgtcggtctcggtgttgaatcttaatccgtgttgagttgattttcgta
US-10-743- 5125   ggtggtgtcgatgaggagccctttcatcctccccacttttcccagcaccattgagga
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus   ggtggtgtcgatgaggagccctttcatcctccccacttttcccagcaccaccattgagga
US-10-743- 5186   tgcccctttcccgtcgtgtgtccctggcgccttgctgaaggtcagttggccgtaactgt

```
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          tgcccccttcccgtcgtgtccttggcgccttgctgaggtcagttggccgtaactgt

US-10-743- 5247 gcatggggacccttcctggccccctgtgccctgcccccatgtcccacccctccct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          gcatggggacccttcctggccccctgtgccctgcccccatgtcccacccctccct

US-10-743- 5308 tacttttctccatggcatgaatcaccccagacctactatacaaaattatccctattatt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          tacttttctccatggcatgaatcaccccagacctactatacaaaattatccctattatt

US-10-743- 5369 tttatttatttattttgagatggagtcctcactgtcacccaggctggagtgcagt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          tttatttatttattttgagatggagtcctcactgtcacccaggctggagtgcagt

US-10-743- 5430 ggcacgatctcggctcactgcaagctccgcctcccaggttcacgccattcctgcctcag
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          ggcacgatctcggctcactgcaagctccgcctcccaggttcacgccattcctgcctcag
```

```
US-10-743- 5491 cctcccaagtagctggattacgggcgcccgccaccatgccggctaattttttgttttt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          cctcccaagtagctggattacgggcgcccgccaccatgccggctaattttttgttttt

US-10-743- 5552 ttcgtagagacagagttccctatgttgcccccaggtggtctcgaactcctgggctcaag
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          ttcgtagagacagagttccctatgttgcccccaggtggtctcgaactcctgggctcaag

US-10-743- 5613 taatccctccacttccggcctcccaaagtgctgggattacaggcatgagccattcggcccgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          taatccctccacttccggcctcccaaagtgctgggattacaggcatgagccattcggcccgg

US-10-743- 5674 cctatttttttttcagacagagttcacctgtcacccaggctgaaatgcattgcaa
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          cctatttttttttcagacagagttcacctgtcacccaggctgaaatgcattgcaa

US-10-743- 5735 tgatcttggctcactgcaacctccacctcccaggttcaaaggattttctggcctcagcct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus          tgatcttggctcactgcaacctccacctcccaggttcaaaggattttctggcctcagcct
```

```
consensus

US-10-743- 5796 cccgaggagctgggattacagtgtgcaaccaccacaccgggctaaatttttggaatttt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         cccgaggagctgggattacagtgtgcaaccaccacaccgggctaaatttttggaatttt
US-10-743- 5857 tttttttactagagacagggtcaacaatgctggtcaggctggtctcgaattcctgacctc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         tttttttactagagacagggtcaacaatgctggtcaggctggtctcgaattcctgacctc
US-10-743- 5918 aagtgatcctccacctcggcctcccaaagtgctgggattacaggcgtgagccgccatgcc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         aagtgatcctccacctcggcctcccaaagtgctgggattacaggcgtgagccgccatgcc
US-10-743- 5979 tggccatggatattgtaaatgttctgttgttgtatgtttcctcactggctgtgcact
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         tggccatggatattgtaaatgttctgttgttgtatgtttcctcactggctgtgcact
US-10-743- 6040 cctgagggcggggcatctgtcccattcttcagtgctgtggtcccctgtgtctgggacagtgt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
```

```
consensus         cctgagggcggggcatctgtcccattcttcagtgctggtcccctgtgtctgggacagtgt

US-10-743- 6101 atacatacagcaggtgcataatcagtcttgactggaaggtgaggggtcaacgcacatgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         atacatacagcaggtgcataatcagtcttgactggaaggtgaggggtcaacgcacatgg
US-10-743- 6162 cagtcattggactatgtgtctgagaagcataactcacttaatcttgaagttcacttatgga
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         cagtcattggactatgtgtctgagaagcataactcacttaatcttgaagttcacttatgga
US-10-743- 6223 ttgaagtgtgcggtcagtgactttaatatattaccgagttgtgtaaccatcaccacca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         ttgaagtgtgcggtcagtgactttaatatattaccgagttgtgtaaccatcaccacca
US-10-743- 6284 tctaatttaaatcatttcatcatcctaaagaaacttcagaccccactagctgtccctc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus         tctaatttaaatcatttcatcatcctaaagaaacttcagaccccactagctgtccctc
US-10-743- 6345 cccctattcctcccacccagccctgtcctggccgaggcgctcacctgcatctctctg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
```

```
US-10-743-  1745

consensus         ctgggactacaggtttgcaccaccatgtcctgctaatttttttttttgtattttaata
US-10-743-  2011

consensus
US-10-743-  6711  gagacagggtttctcctcattggccaggctggtctcgaactcctgacctcagacgatccac
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         gagacagggtttctcctcattggccaggctggtctcgaactcctgacctcagacgatccac
US-10-743-  6772  ctgcccagcctcccgaagtgttgggattacaggcacgagccactgtgcccggccatcatt
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         ctgcccagcctcccgaagtgttgggattacaggcacgagccactgtgcccggccatcatt
US-10-743-  6833  cctttactgctgactaatagtctgctgtgtgaatccaccgctagaaaccaccactcatcag
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         cctttactgctgactaatagtctgctgtgtgaatccaccgctagaaaccaccactcatcag
US-10-743-  6894  ttgatggtcatgtggggttgcttctgcttcattcgcttattgaacagtgctggaataaacgt
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         ttgatggtcatgtggggttgcttctgcttcattcgcttattgaacagtgctggaataaacgt
US-10-743-  6955  tcctgtgcactcctgggcatacgcctaggagtggaactgctgggtcaaatggtgactttac
US-10-743-  1442
US-10-743-  1582
```

```
US-10-743-  2011

consensus         ccctattcctcccacccagcctgtcctgcgccgcaggctgctcacctgatcctctg
US-10-743-  6406  tggatctgccggttgtgtggacattcacacacctgctgcgagtcctgctgctgcctcttt
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         tggatctgccggttgtgtggacattcacacacctgctgcgagtcctgctgctgcctcttt
US-10-743-  6467  cactcgctgtgtgatgttcacccatgttcatctctatatcggtacttacttcctttt
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         cactcgctgtgtgatgttcacccatgttcatctctatatcggtacttacttcctttt
US-10-743-  6528  tttttttggagatgaagtcttgctctgtgtcttgtcaccaggctggagtgcagtggcgtgatctcg
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         tttttttggagatgaagtcttgctctgtgtcttgtcaccaggctggagtgcagtggcgtgatctcg
US-10-743-  6589  gctcacagcaacttctgcctctgggttcaagtgattcctgcctcagcctcccaagtag
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011

consensus         gctcacagcaacttctgcctctgggttcaagtgattcctgcctcagcctcccaagtag
US-10-743-  6650  ctgggactacaggtttgcaccaccatgtcctgctaatttttttttttgtattttaata
US-10-743- -1442
US-10-743-  1582
US-10-743-  1577
```

US-10-743- 1577
US-10-743- 1745
US-10-743- 2011   tcctgtgcactcctgggcatacgcctaggagtggaactgctggtcaaatggtgactttac
consensus

US-10-743- 1582   atccacttgggaaatgcttattcaagtcctttgtccacattgactgggtgctgtctt
US-10-743- 1577   tttattcattactacgatgacgacagcccctacatggaaggatttgtgtttttgtaatcccat
US-10-743- 1745
US-10-743- 2011
consensus

US-10-743- 7016   gtttaacgttctgaggagcgccgccaggcgtttaacacagtgactgaccattcacattcc
US-10-743- 1442   tttattcattactacgatgacgacagcccctacatggaaggatttgtgtttttgtaatcccat
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus

US-10-743- 7077   gtttaacgttctgaggagcgccgccaggcgtttaacacagtgactgaccattcacattcc   tttattcattactacgatgacgacagcccctacatggaaggatttgtgtttttgtaatcccat
US-10-743- 1442   tgccaacaatgtgtgagaattccaattcctcacatcccacacattctccttta aaaaaaa   tacccgaggtgagaatgaattgccagttgctccaggcctcagctcttaggagaggagcct
US-10-743- 7382
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus

US-10-743- 7138   gaaaaaagaaacatagccatcaagtgatgtggagcagactgtccctctggttgggtt   taccccgaggtgagaatgaatgaattgccagttgctgctcaaggcctcagtcttaggaggagcct
US-10-743- 1442   ggacctggagctgctccgggctctggcaaagctccaatccggccttagtccttgaggcct
US-10-743- 7443
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus

US-10-743- 7199   gcgttgctttatggctcatgatgtctgagtcctctccatgtgctcatgggattcgtat   ggactggagctgctccgggctctggcaaagctccaatccggccatgaggaagccgacctccctgcacgg
US-10-743- 1442   ggtcctcaccagctttctccttccaccgtgctcatgaggaagccgacctccctgcacgg
US-10-743- 7504
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus

US-10-743- 7260   gcgttgctttatggctcatgatgtctgagtctctccatgtgctcatgggattcgtat   ggtcctcaccagcttctccttccaccgtgccatggaggaagccgacctccctgcacgg
US-10-743- 1442   atctacttgggaaatgcttattcaagtcctttgtccacattgactgggttgctgtctt   ctggcctggggtgttgttcacgactgagtcccagaggtgtcccagaacggatgtcactggtcaca
US-10-743- 7565

```
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         ctggccctgggtgttgttcacgactgagtccaggtgtcccagaacgacggatgtcactggtcaca

US-10-743-  7626  gtgttcctggtaataggtgacccaggcacagggtgtcctgatcatagtaacccaggca
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         gtgttcctggtaataggtgacccaggcacagggtgtcctgatcatcataggtaacccaggca

US-10-743-  7687  caggtgtcccagtcacaggtgtctccaggcacagggtgtcccagtcacaggtgtcccaggt
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         caggtgtcccagtcacaggtgtctccaggcacagggtgtcccagtcacaggtgtcccaggt

US-10-743-  7748  cacaggcgtcccaggcacaggtgtccctggtcacagatgtcccaggcacacaggtgtcccca
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         cacaggcgtcccaggcacaggtgtccctggtcacagatgtcccaggcacacaggtgtcccca

US-10-743-  7809  ggcacaggtgtctccaggcacagggcgtcccaggcacagatgtcccaggcacaggtgtccc
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         ggcacaggtgtctccaggcacaggcgtcccagtcacaggtgtcccggtcacaggtgtcc
```

```
US-10-743-  7870  ctggtcacaggtgtctccaggcacaggtgtccctggtcacaggtgtcccggtcacaggtg
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         ctggtcacaggtgtctccaggcacaggtgtcccggtcacaggtgtcccggtcacaggtg

US-10-743-  7931  tcccaggtcacaggtgtcccggtcacaggtgtcccggtcacaggtgtccggtcacag
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         tcccaggtcacaggtgtcccggtcacaggtgtcccggtcacaggtgtcccggtcacag

US-10-743-  7992  gtgtcccaggcatggtgtcctggtcacaggcaccatggtcacaggtgtcccaggca
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         gtgtcccaggcataggtgtccctggtcacaggcaccatggtcacaggtgtcccaggca

US-10-743-  8053  caggtgtcctggtcacaggtgtcccagtcacagctgtcccggtcacaggtgtctccaggc
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus         caggtgtcctggtcacaggtgtcccagtcacagctgtcccggtcacaggtgtcccaggc

US-10-743-  8114  acaggtgtcccggtcacaggtgtcccaggcacaggtgtcccggtcacaggtgtcccag
US-10-743-  1442
US-10-743-  1582
US-10-743-  1577
US-10-743-  1745
US-10-743-  2011
consensus
```

```
consensus       acaggtgtcccggtcacaggtgtccccaggcacaggtgtcccggtcacaggtgtcccag
US-10-743- 8175 gcacaggagttcctggtcacaggtgtcccaggcacaggtgcccaggcacaggaagccgatgcat
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       gcacaggagttcctggtcacaggtgtcccaggcacaggcagccacaggaagccgatgcat
US-10-743- 8236 ggaacagagagagacaagagacacaagaaaagagagtgagagacagagaaatgggaaaca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       ggaacagagagagacacaagagacacaagaaaagagagtgagagacagagaaatgggaaaca
US-10-743- 8297 gaaatggttggagaaagcatccagtagacatgaatagagaggaagagagaggaggggggacg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       gaaatggttggagaaagcatccagtagacatgaatagagaggaagagagaggaggggggacg
US-10-743- 8358 ggcagcagagacccaggggaggctgcagtgcctgaccccctcaccacacttccattctgcc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       ggcagcagagacccaggggaggctgcagtgcctgaccccctcaccacacttccattctgcc
US-10-743- 8419 cttcctgggaagacttccagaaaagtgggccaggctgaggggacgatgaggagacacagagg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
```

```
US-10-743- 2011
consensus       cttcctgggaagacttccagaaaagtgggccaggctgaggggacgatgaggagacacagagg
US-10-743- 8480 cccagggggaggaggaggagcggcaccccgagggggctgtgtcagctcaaagcctct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       cccagggggaggaggaggagcggcaccccgagggggctgtgtcagctcaaagcctct
US-10-743- 8541 gggtcaaggataaatcctctgaccttgacctccgacctccctcccttggctccaggct
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       gggtcaaggataaatcctctgaccttgacctcccctcctcccttggctccaggct
US-10-743- 8602 cccacacagcttccatgaccaaatcttacaggaagctgaagggcagtccggtgagggtc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       cccacacagcttccatgaccaaatcttacaggaagctgaagggcagtccggtgagggtc
US-10-743- 8663 tgtaagtcaccgccagggcacagaacgagggtcggcaggggaggagagaccccctgggctgc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus       tgtaagtcaccgccagggcacgacaacgagggtggcaggggagagagaccccctgggctgc
US-10-743- 8724 cgtctgccttcaccctgcacatccgcatcaggcctgtgtgggggtgtcaccatcctcactccctgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
```

```
US-10-743- 1745

US-10-743- 2011

consensus        cgtctgcctcaccctgcacatcaggcctgtgtgggggtgtcaccatccttcactccctgg

US-10-743- 8785  catctgatccaagattacgcctggcagggcctctcctctgggattagctccgggaaagctc

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        catctgatccaagattacgcctggcagggcctctcctctgggattagctccgggaaagctc

US-10-743- 8846  ccatcagtgaagggaggggggctcaggctctgtgcacacaggggtgcccccttccagggaggg

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        ccatcagtgaagggaggggggctcaggctctgtgcacacaggggtgcccccttccagggaggg

US-10-743- 8907  agcagctcccacatggcagaacactcattcctgtcagtgctctcctgagcacacaagg

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        agcagctcccacatggcagaacactcattcctgtcagtgctctcctgagcacacaagg

US-10-743- 8968  attaaactgagcagcaagcactccagtggccgagaggccctgggggatgggcccctgcc

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        attaaactgagcagcaagcactccagtggccgagaggccctgggggatgggcccctgcc

US-10-743- 9029  ctggcctcccctgcaaggcagctcccgccccggggccctgcctcctgagagcgaggtgtgca

US-10-743- 1442

US-10-743- 1582
```

```
US-10-743- 1577

US-10-743- 1745

US-10-743- 2011  ctggcctcccctgcaaggcagctcccgccccggggccctgcctcctgagagcgaggtgtgca

consensus

US-10-743- 9090  ggctcttcctatgggctacctggcccatcccagaacggcctgcactgtccctccccgacc

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        ggctcttcctatgggctacctggcccatcccagaacggcctgcactgtccctccccgacc

US-10-743- 9151  tgcacccagacatggacactcaccctcccaaccctgagacattcaggtccacactgggg

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        tgcacccagacatggacactcaccctcccaaccctgagacattcaggtccacactgggg

US-10-743- 9212  cctgggcccccaagttgcatggggactgggtgcctggcgcctctctgtgagtattc

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        cctgggcccccaagttgcatggggactgggtgcctggcgcctctctgtgagtattc

US-10-743- 9273  ctacacacagagcctgcttcctctccaacctgcacctaaacatggacactcaccatcccca

US-10-743- 1442

US-10-743- 1582

US-10-743- 1577

US-10-743- 1745

US-10-743- 2011

consensus        ctacacacagagcctgcttcctctccaacctgcacctaaacatggacactcaccatcccca

US-10-743- 9334  accccgagacttcaggtccacactgggccccccaagttgcatggggactgg

US-10-743- 1442
```

```
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       gggcaggcaggacggagccatgagggttgctgagacccaggatgtgcactgtggga

US-10-743- 9395 agccaccaccaccagagcggcaagggagaagttagtggtgccagaacatggc
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       agccaccaccaccagagccggcaagggagaagttagtggtgccagaacatggc

US-10-743- 9456 taaacgaggcagccatggaaaggggatgcagacaggagtggaggaggaggcggttctcca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       taaacgaggcagccatggaaaggggatgcagacaggagtggaggaggaggcggttctcca

US-10-743- 9517 ggagccctaggacctgctcctggggctgctgctgagcccaactgggaaccagagcacag
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       ggagccctaggacctgctcctgggctgctgctgagcccaactgggaaccagagcacag

US-10-743- 9578 ggagccctaggacctgctcctggggctgctgctgagcccaactgggaccagagcacag
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       ggagccctaggacctgctcctgggctgctgctgagcccaactgggaccagagcacag

US-10-743- 9639 gataatggtgacactggtgatgatggcgatggagatgattatgatggtgatgatggtg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       gataatggtgacactggtgatgatggcgatgatgggagatgattatgatggtgatgatggtg

US-10-743- 1582 accccgagacttcaggtccacactggggcctgggcccctcaagttgcatgggactgg
US-10-743- 1577 gctgcctcggcggcctcttctgtgagtgttcctacacacagagcctgcctcctgtccgggtg
US-10-743- 1745
US-10-743- 2011
consensus       gctgcctcggcggcctcttctgtgagtgttcctacacacagagcctgcctcctgtccgggtg

US-10-743- 9456 atgttgggtcgtcctccgcctctgggagcacctgcaggggcgttgctgtctgggctccctgg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       atgttgggtcgtcctccgcctctgggagcacctgcaggggcttgctctgggctccctgg

US-10-743- 9517 agatgcaagccccgggctgcctgctgctgttatgtgtatccattaagcccatgccagcg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       agatgcaagccccgggctgcctgctgctgttatgtgtatccattaagcccatgccagcg

US-10-743- 9578 gggtctccgcaagaaacaggcacagtctgtgagggggctaatgaggcctgatttctcca
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011
consensus       agatgcagccccgggctgcctgctgttatgtgtatccattaagcccatgccatgccagcg

US-10-743- 9639 gggcaggcaggacggagcccatgagggttgctgagacccaggatgtgcactgtggga
consensus       gggtctccgcaagaaacaggcacagtctgtgagggggctaatgaggcctgatttctcca
```

US-10-743- 9944 atggtgtgatgatgatggtgtgatgatgtgacggtgtgatgatgtgatgatggtgtga
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   atggtgtgatgatgatggtgtgatgatgtgacggtgtgatgatgtgatgatggtgtga

US-10-743- 10005 tgatggtgacggtgtggtgtgatgatgctgatgatgtgatgatggtgtgatgatgtgacggt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   tgatggtgacggtgtggtgtgatgatgctgatgatgtgatgatggtgtgatgatgtgacggt

US-10-743- 10066 gatgatgatgatggtgacggtgatgatgatgatggtgtgatgatgtgatgatggtgtggtg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   gatgatgatgacggtgatgatgtgctgatgatgtgatgatggtgtgatgatgtgatgctggtg

US-10-743- 10127 gtgatgatggtgtgatgatgcatgtgatgatgtgatgatggtgtgatgatgatggtgatgtga
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   gtgatgatggtgtgatgatgatgatgtgatgatgtgatgatggtgtgatgatgtgctgatgatga

US-10-743- 10188 tggtgatggtgatcatggtgatgatgatgtgatgatgatggtgtgatgatgatggtgatgtggt
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   tggtgatggtgatcatggtgatgatgatgatggtgatgatgtgatgatgatggtgatgtggt

US-10-743- 10249 gatgatggtgatgatggtgatgatgatgatgatggtgatgtggtgatggtgatgtcttcaccacggggcg
US-10-743- 1442
US-10-743- 1582
US-10-743- 1577
US-10-743- 1745
US-10-743- 2011

consensus   gatgatggtgatgatgatgatgatgatgatggtgatgtggtgatgtgtgatgtcttcaccacggggcg

Alignment score = -209195.00

Scoring matrix:

	1	2	3	4	5	6
1	-7900	-7200	-7875	-10045	-8715	
2		730	1287	-638	680	
3			676	-1414	-123	
4				-594	736	
5					403	
6						